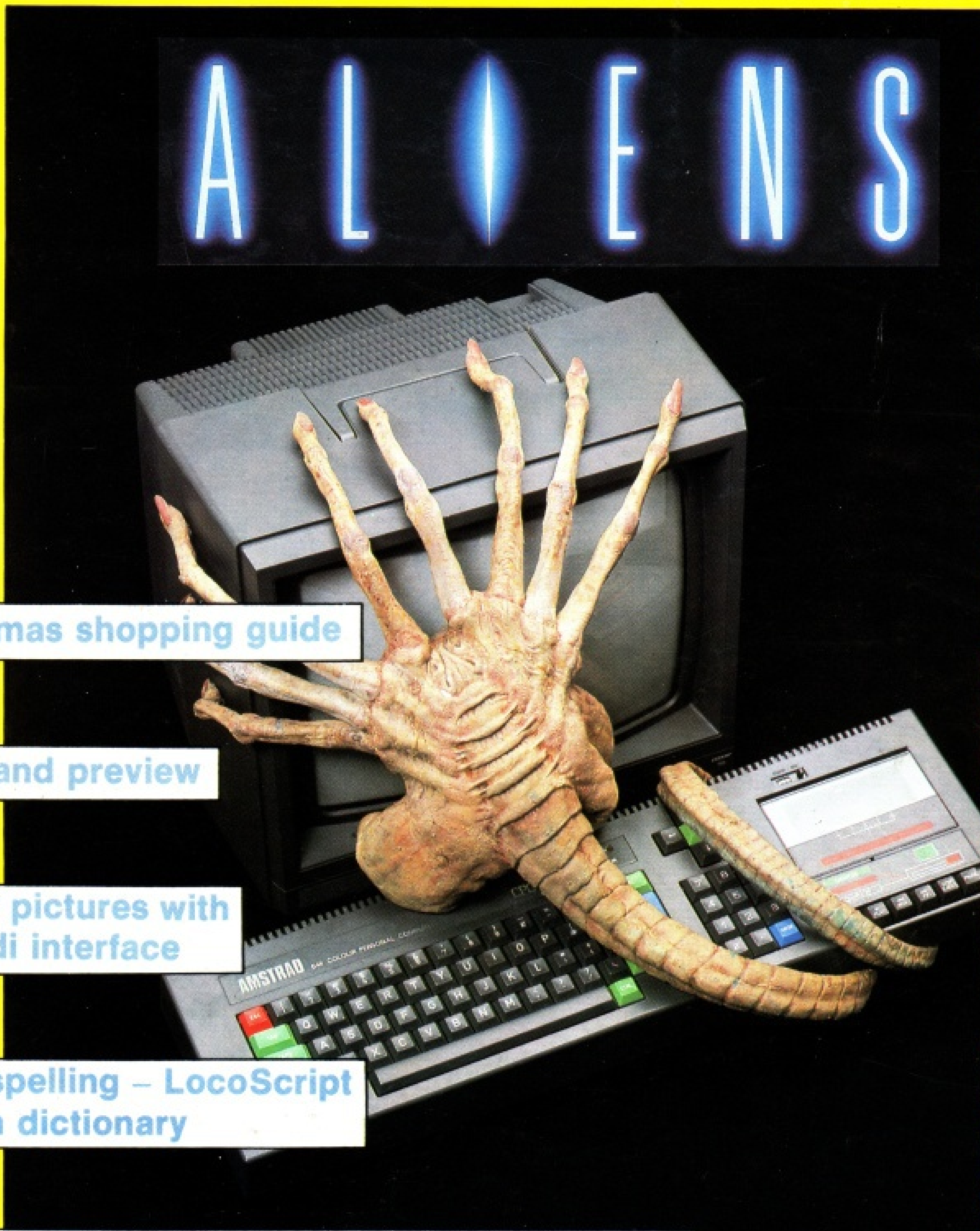
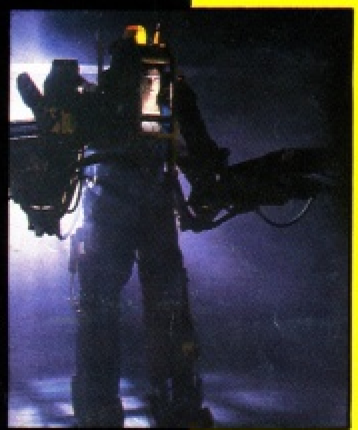
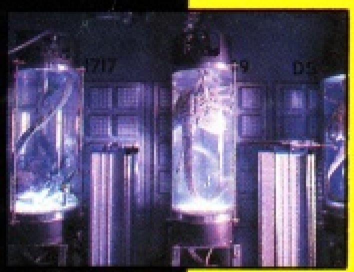
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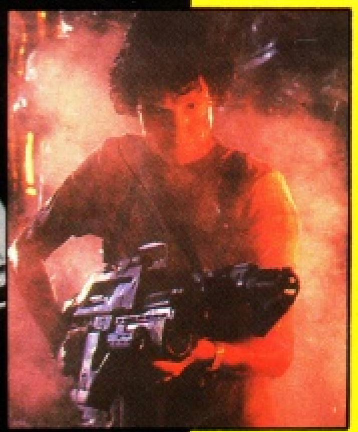
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AMSTRAD COMPUTER USER











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The official magazine for all users of Amstrad computers

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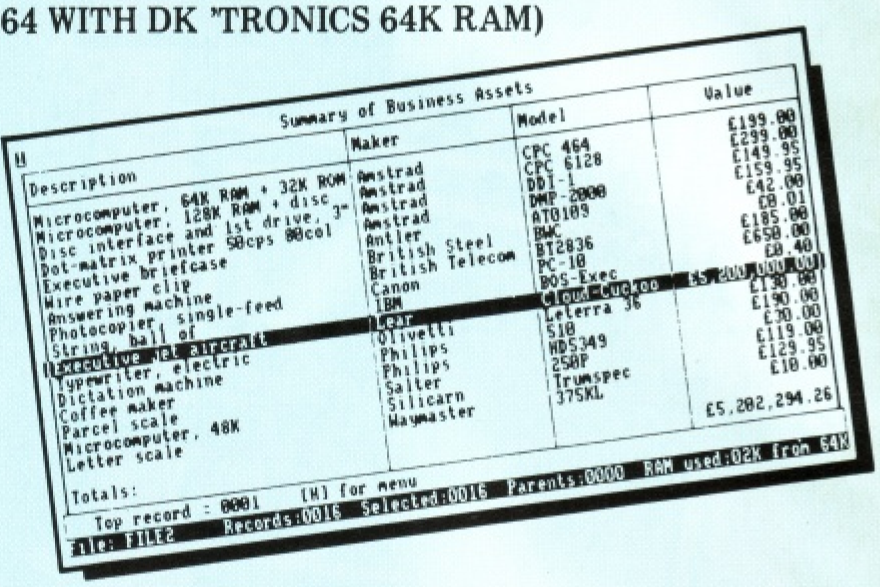
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MASTERFILE III

FOR THE AMSTRAD CPC 6128 (ALSO CPC 464/664 WITH DK 'TRONICS 64K RAM)



RATHER ENHANCED ...

We are pleased to announce the third major issue of MASTERFILE. This is no mere update, but a thoroughly enhanced and streamlined re-design of MASTERFILE 128, packed with new features, and a delight to use. We included some of the best ideas which our earlier MASTERFILE customers contributed. We sent prototypes out to our eager "test" users, and they kicked it as hard as they could, and came up with even more ideas. We spent several weeks further honing MASTERFILE III. Then we sat down and totally rewrote the manual.

SOMEWHAT POWERFUL ...

For the benefit of newcomers to the CPC machines, MASTERFILE III is a very powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. But unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not pre-formatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu-driven throughout, and comes with detailed illustrated manual, and example files.

EVER SO FAST ...

Just about **Any** kind of information can be handled by MASTERFILE. You can **Export** the data to other systems (e.g. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing. You can build new files from other sources — e.g. transfer data from Spectrum MASTERFILE. The speed of **Search** of MASTERFILE is second to none. We even get calls from customers who say that "The search did nothing"; they simply blinked and missed the revised status saying how many records had been found! Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.

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How much does it cost? Just £39.95. Our test customers all say this is far too low — but then we didn't charge them this! However, we appreciate that many of you are "home" users who do not want to pay a "business" price. So we kept to a realistic figure. But don't be fooled by the low price. This is no toy written in **Basic**, nor is it a lumbering CP/M dinosaur. This is real machine-coded computing power. We have had IBM and Apricot users beg us for a MASTERFILE for their machines — when they had seen the earlier CPC MASTERFILE. They are going to be more frustrated now. So are the PCW plodders. Alas, many of you pay a lot more, because you buy one database after another before you throw them all out for MASTERFILE. The trick is to ask around, read the reviews and choose MASTERFILE III first time. Try telephoning our competitors and ask to speak to the programmer for technical information. Then try us. We think you will spot the difference!

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AMSTRAD NEWS

Amstrad raps PC rumours

The Sunday Times carried an article on October 19 which claimed that Amstrad PCs overheated and gave the impression that Amstrad had lost a £4million contract with ICI.

Both Amstrad and ICI have refuted this story. Malcom Miller of Amstrad has been quoted as saying: "It was inaccurate and damaging. We are seriously considering what further action to take." ICI also denies that it has rejected the Amstrad PC.

The Director of Information Technology, Derek Seddon, says: "It is far too early for us to make a decision on the PC 1512. Our tests last three months and we have only just started. We have taken samples of the PC1512 for test because this machine could offer very good value for money".

One of the most widespread rumours was that the Amstrad PC did not work, or overheated with network cards fitted. This is untrue. Amstrad tested a large number of cards before the machine was launched.

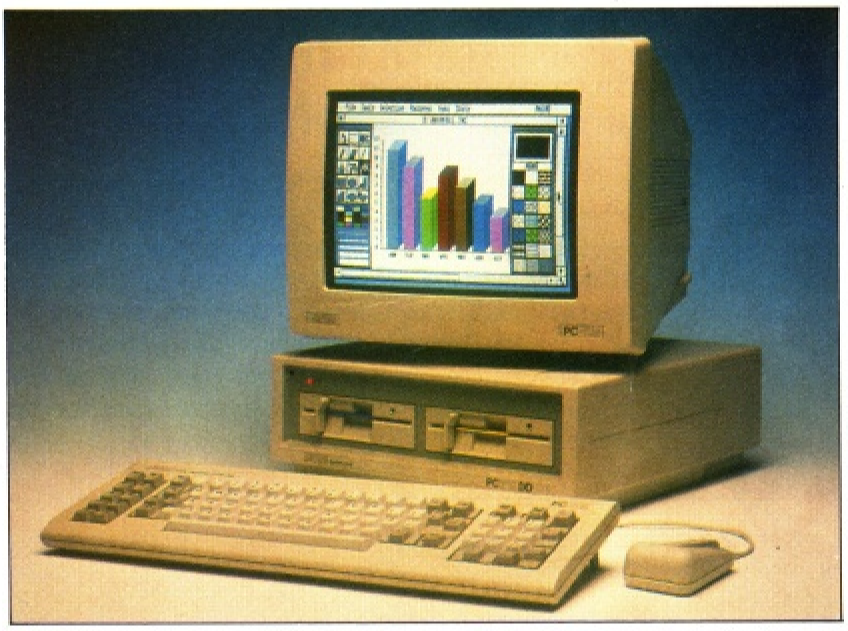
One facet of the Sunday Times story which did bear an element of truth referred to an unpredicted high demand for hard disc models.

No hard discs are fitted with machines when they are manufactured. All PCs have the hard discs added in Amstrad's Shoebury factory after the basic computer has been tested.

More discs – and they're cheaper, too

The shortage of Amstrad discs seems to have eased and production is meeting the demand from disc hungry Arnold and Joyce users.

In fact things are going so well that Amstrad has decided to cut the recommended retail price to £2.99 per disc. They will be available from the Amstrad user club and approved Amstrad stockists



PC1512... overheating rumours are coolly refuted

A businesslike show

The last Amstrad show was in October and you'll be reading this in November. However the lore of magazine publishing means that this is the December issue, which brings us on to the next show in January. The shows don't seem to stop, but they do get better and better.

Amstrad and Database (the show's organisers) had insisted that no tape copiers were allowed. The one exception to this rule allowed companies to sell hardware which could save memory to disc if that same unit was required to re-load the software. This meant that Romatic Robot was free to sell its specially modified Multiface two.

A new name on the Amstrad scene is DataPhone, which has an unapproved modem for the PCW based on the Demon modem. It can operate at 300/300 baud and 1200/75 baud. The KiwiChat software (written by the one and only Hairy Hacker) will work with both scrolling and Viewdata systems.

Joyce (PCW) peripherals were very much in evidence. ASD was showing its 10 and 20Mb hard discs, and the ideal thing to put your Joyce on was on view on a nearby stand – IQ desks look very smart but are a little awkward to move from place to place. Arnor seems to have taken a liking to a big stand at the bottom of the stairs. It had three new products: The long awaited CP/M Protext, on show but still not available, a new 3D graphics package called Model Universe and a rom version of the BCPL language.

Kempton Data was selling its mouse and joystick interface for the PCW and the Nabitchi Gem-like front end.

That stalwart of the word processor scene Tasman was moving with the times by selling Tasword PC, a version of the popular Spectrum program for the IBM PC. A demo version costs £2 and the full thing £24

The Electric Studio had its video digitiser on display. This works with both the Joyce and the 6128. The fast frame rate was illustrated by running a copy of 2001 through a 6128.

Glentop has had PC books available since the launch of the machine with the help of Digital Research. At first glance these looked very good – not the usual global replace job which usually accompany a new computer.

PCW owners will appreciate the book

on Mallard Basic by Ian Sinclair aimed at the naive user. It must be good – Locomotive Software is selling it.

The best product at the show was the Rombo Vidi digitiser – there is a full review in this issue. Other exhibitors were very impressed, many of them buying one of the boxes. AMX is thinking of taking on the Vidi for use with its Pagemaker package. Talking of Pagemaker, it did it's usual non-appearance act at the show. When they do get it out we'll have nothing to moan about.

Creative Sparks Distribution span the whole range of software, from Sparklers budget software to Trustwriter, a WordStar clone for the new PC. But first impressions of Trustwriter were not very good.

DK'Tronics showed a television tuner which turns your monitor into a TV for £69.95. A later model with teletext will cost £99.99.

New from Pace is the Linnet V21/V23 modem which is suitable for use with the new PC. The stand was doing a roaring trade, displaying the Series 4 modem and pre-production version of Commstar software for the PCW.

CP Software was showing Bridge and a sprite package for the PCW, which goes to prove that Joyce owners do more than word process.

The show came at the right time for Amsoft, which has an exclusive distribution deal for LocoMail and stocks of the new firmware guide SOFT 968.

The next show is on January 9 – see you there.

Oh dear!

There was a mistake in our Poke for Thrust line 160 should have read:

160 DATA 3e,c3,21,39,9e,32,30,00

Sorry. It won't happen again - well it probably will but we'll try to avoid it.

Serial interface available

The Pace/Amstrad alliance continues with the badge-engineered RS232 interface mentioned in these pages a couple of months ago. The interface uses the excellent Comstar software written by ex-Amstrad engineers Chris Honey and Chris Laing. A new deal will allow Amstrad to sell the Linnet modem for the PC.



The Sega games computer

New games from Ariolasoft

The flood of games from Ariolasoft continues unabated. This month there is Sepulcri, a 3D isometric where you control Robbie the Robot through loads of mazes. The graphics are by the famous Jill Lawson, a regular contributor to ACU.

Werner is a popular German cartoon character who loves beer and motorbikes. After a night out with some friends he is challenged to a motorcycle race to end all motorcycle races.

Have you ever wanted to be a frog? Now is your chance. In Camelot Warriors you turn into all manner of things. A neat little spritey game with some nifty animation.

Ariola's fourth game doesn't run on anything – it's a game in itself. The Sega machine is a dedicated games computer, and it shows the games are fantastic – just the thing to keep rival siblings from your CPC, pretty cheap too at £99.95.


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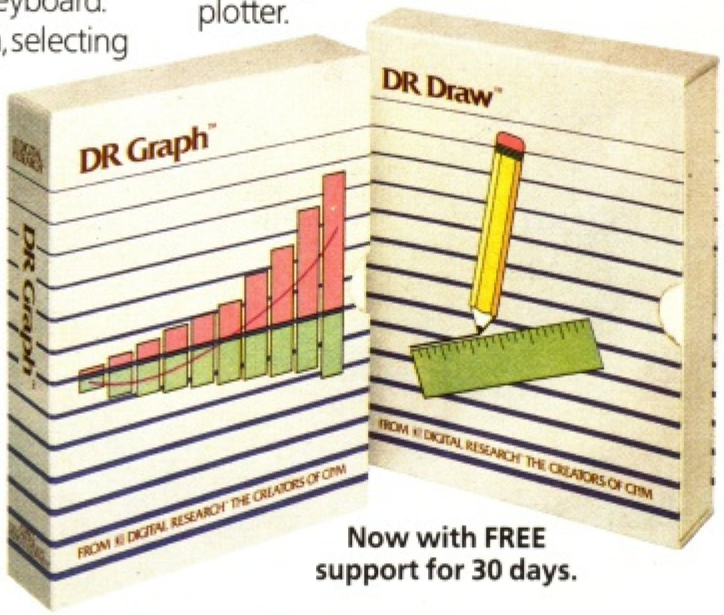
Zoom in for detailed work, then zoom back out to view the entire picture. Or zoom out to fit your picture neatly in a 8½"x 11" or 11"x 8½" page layout. On extra-large drawings, you can pan the screen back and forth over each section.

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Please bear in mind that the views expressed herein are not necessarily those of Amstrad. Be assured that all your views are given thorough consideration. This letters section is the Amstrad Computer User's own forum.

Accents axed

Looking through the June issue of Letters I was disappointed to see that you did not correctly advise Susanne Lees of Caithness on how to get the foreign letters and accents on screen on to her printer.

She might find the solution by looking through her printer's manual to see if it supports the symbols in question and how to obtain them through the use of DIP switches.

I am multilingual and have to use foreign letters and symbols all the time. The combination of Protext and a Citizen 120D lets me achieve my objectives without any problems.

I would certainly like to get in touch with other multilinguals and polyglots using Amstrad CPCs out there to exchange information concerning this kind of problem.

Richard Wong,
76 Rue Gay-Lussac,
75005 Paris,
France.

ACU: *Suzanne Lees' main problem was that she uses a DMP–1. There are many solutions to this, the cheapest being to buy Tasprint, the most elegant being to buy a PCW.*

A CPC with Protext and a flexible printer sounds like a good compromise.

Bye bye PCW, Hi PC

I have been using an Amstrad PCW as a word processor for the last year and have been very satisfied in all respects, but am now considering upgrading to an Amstrad PC to run more comprehensive spreadsheet and accounting packages.

I am, however, a little concerned about the various press comments concerning the quality of the screen display.

As my main use for the PC will still be word processing I would like to know whether the PC's screen definition is in fact good enough for word processing and how it compares with the PCW's screen definition.

If I do go for the PC, which monitor do you think would be better for word processing colour or monochrome?

Finally which of the professional word processing packages would you recommend to succeed LocoScript?

H.R.Rayner,
Edgware,
Middlesex.

ACU: *For word processing you would be much better off with a mono monitor. The system I am buying for home use is a PC with mono screen and 20Mb hard disc.*

This is an excellent word processing system. If you don't want to stretch to the price of the 20Mb hard disc then you should certainly try for a 10Mb.

I don't feel that the advantages of a colour monitor are worth £150 if you are using serious software. The packages to look at are SuperWriter and NewWord 2, both at around £70.

Amstrad is offering WordStar 1512 which falls between the two stools of not being WordStar and not being LocoScript. – SR.

Handling strings

As a newcomer to computing I have been experimenting with some simple programs in Basic involving questions and answers and find that it is apparently not possible to use the command GOTO X (a variable) to facilitate the handling of strings.

Is there a facility for manipulating line numbers in Mallard Basic which I have missed? If not which of the other languages available for the PCW would you recommend for the manipulation of text involving questions and answers?

Peter Russell,
Helens Bay,
Co. Down,
N. Ireland.

ACU: *Using Locomotive Basic it isn't possible to goto a calculated line number as you describe. However, there is a facility to do this in a different way.*

ON...GOTO can be used to goto a specific line number according to the value of a variable. With a little thought you should be able to substitute this.

High altitude Arnold

Can I speed up my CPC 6128 by replacing the Z80A with a Z80B processor which has a faster clock rate, or will the other chips be unable to keep up?

(Upgrading in this way is more complicated than just changing one chip, you would need to get a faster clock signal, this would then cause unpredictable problems within the rest of the computer. – Ed)

Is anyone planning to publish a firmware spec or a memory guide for the

6128? Can one get by using the 464 publications?

(There is now a new firmware guide called SOFT 968 which should be available from the User Club – Ed)

Is there a really good flight simulator for the Amstrad – something with decent graphics and comprehensive instrumentation like Flight Simulator for IBM. I have tried Fighter Pilot on the Spectrum and while it is okay there is definitely scope for something better.

(The best flight simulator around at the moment is Tomahawk from Digital Intergration, but MicroProse is having a range of flight simulators, including the excellent Acrojet, converted by Andromeda software.)

Finally may I comment on how well the 6128 tolerates the dreadful voltage fluctuations we experience here in Nepal.

Several of my colleagues run their American hardware from expensive car battery inverter systems and advised me to do likewise.

However, although my monitor wobbles from time to time I have experienced no corruption of data and have only lost the memory when the supply has failed completely.

Mike Roake,
United Mission to Nepal,
Kathmandu,
Nepal.



CB aggro answer

I am afraid your advice about the Home Office is way out of date. The writer was quite correct in stating that the Radio Investigation Service of the Department of Trade and Industry is the place to go – but wrong when he says they will do nothing.

The procedure is to complete a form, but make it clear that the interference is from CB – give the address and any other information that points to this.

Most enquiries are to investigate interference to TV and it may be the officer he contacted did not understand what he was being told.

David E. Daniel,
Handle 'Red One',
Hon Secretary,
The Bravo Alpha Sierra Group,
Liverpool.

On-line banking

I have an Amstrad 6128 and I have been interested in the possibility of operating a Nottinghamshire Building Society Homelink account.

The building society literature says that one needs to buy or hire a Homedeck alphanumeric keyboard but if one is an existing Prestel subscriber no additional equipment is necessary.

The building society says it can supply a Homedeck at a specially reduced price of £150 including VAT and that there are two versions, ordinary Homedeck or a microcomputer version.

Do you know anything about this latter version? And can I purchase one of the many modems and software for my Amstrad 6128 which are advertised in the Amstrad magazines and operate a Homelink building society account without purchasing a Homedeck? This would appear to be cheaper than purchasing a Homelink in some cases.

A.R. Wilkins,
Long Hanborough,
Oxford.

ACU: *Your best bet would be to buy a modem, serial interface and software. This will provide you with more facilities than a simple Homedeck.*

Make sure you subscribe to Prestel Microcomputing. We would recommend the Pace setup using the CommStar software.

Brumm club

I would like to inform fellow readers that I am in the process of forming a users' club in Birmingham. Could those interested write to me?

Hopefully we won't have to charge anything to join. We also hope to have access to a university which uses 6128's.

If you live locally please drop me a line.

John B. Woods,
54 Lockwood Road,
Northfield,
Birmingham, B31 1QD.

A word of caution

Truly has it been said: Those whom the gods would destroy, they first make mad.

"If there was a market in mass produced portable nuclear weapons, we'd market them too". – Alan Sugar, September issue of International Management.

Consider the renewal of my subscription cancelled.

D.A.Russel,
London E8.

Software starved

I am writing to ask if you can help me at all. As a PCW user I find there is very little in the way of software available to me, compared to the long list of business software suitable for use on other Amstrad computers.

The list on the centre pages of the Amstrad software catalogue proves my point. Only six of the 36 titles listed are suitable for the PCW.

I have the book Mastering the Amstrad PCW 8256/8512 by John M Hughes with me. On page 101 he says "... or load a computer language, like Basic which is a popular 'programming language' often taught in schools and widely used all over the world".

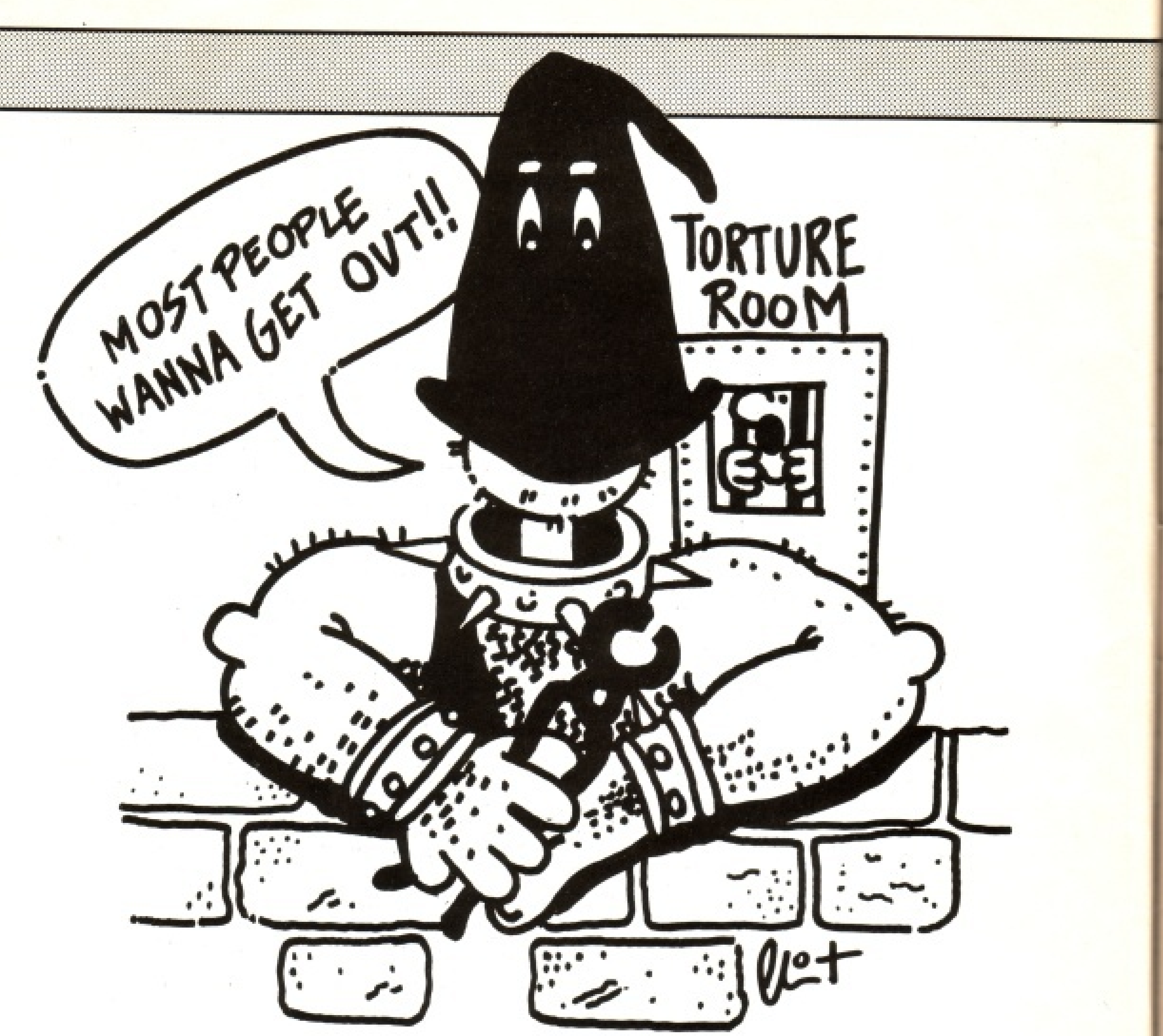
Is it possible for me to find a Basic program or is it not available? I can find lots of useful applications programmed in Basic – my local library is full of them – but as Joyce doesn't speak the language they are useless to me.

I do realise that I could learn to

program using Mallard Basic but it would be a long, hard, uphill task for someone who left school years ago!

Mrs K.Walker,
Harwich,
Essex.

ACU: There is plenty of PCW software about, but not much from Amstrad. Try NewStar on (0277) 220573.



Digital pictures

Owners of a CPC464 or 6128 may be amused by the following striking pattern-drawing program, adapted from an idea in Scientific American:

```
10 PRINT:INPUT "Enter three
   numbers a,b,c: ",a,b,c
20 x=0:y=0:k=1
30 MODE 1: BORDER 0:INK 1,24:
   INK 2,6
40 PLOT x+y+320-a,x-y+200,k
50 z=y-SGN(x)*SQR(ABS(b*x-c))
60 y+a-x
70 x=z
80 k=3-k
90 GOTO 40
```

The remarkable feature is the variety and complexity of the patterns generated from such a simple program. The delicate tracery of each pattern builds up in a fascinating manner.

First a simple outline is generated, then nothing much seems to happen for maybe ten minutes, then a whole level of complexity is added and this may happen repeatedly, often for several hours.

There exist many interesting combinations of input numbers a, b, c. To get started, try the combinations 100, 10, –50 and –70, –1,200. Any values may be used, though the scale of the pattern will be found to depend on a, which is best kept below 250.

Andrew Bebbington,
Canterbury,
Kent.

ACU: Thanks for the program, we will have a similar article in a future issue.

Locked out

Please can you help me? I saw in your September issue a map for CRL's The Rocky Horror Show. On this map is the Torture Room. Please can you explain how I get to the torture room in the game.

Gary Jones,
Whitstable,
Kent.

Mental picture

I was wondering what Nigel, Liz and Colin look like. You know, the ones who review the games, I'm totally infatuated with Nigel's style of writing and wondered what they all looked like.

Next time I write it might even be from a printer. I was also wondering if there was anything I could buy to connect my Casio MT52 keyboard to my 464.

Stephanie Hornby,
Fleetwood,
Lancs.



Disc case life cycle

In your recent correspondence an unfortunate disc user complained of missing disc cases. I have experienced this same phenomenon of disc cases disappearing.

Surely you answered the question yourself in saying that many spare cases appeared in your office. Obviously these cases have a homing instinct and I suspect my cases, like your other correspondent's, have found their way back to the Amstrad birthplace, perhaps trying to find reincarnation.

If you can accept this explanation would you be kind enough to return my five missing cases.

P.J.Clarke,
Ashtead,
Surrey.

Life cycle II

I read with interest the letter in the September issue about the empty cases for discs.

I have a suggestion. Sell off your heap of plastic containers to your readers, maybe with a limit per order. Then everybody gets happy. You get rid of your surplus containers and your readers get what they need. I will be the first to order four containers.

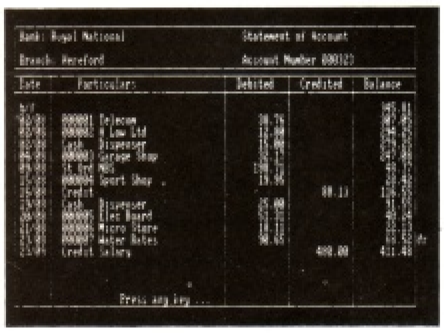
Gorm Helt-Hansen,
Domusvej,
Denmark

ACU: We can only surmise that the ACU office is merely a stop-off point in the migration of a disc case – they all seem to have deserted us. You can always buy a special box.

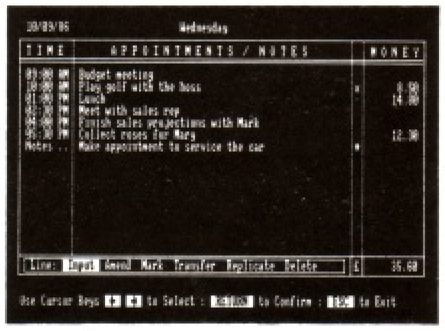
ACU

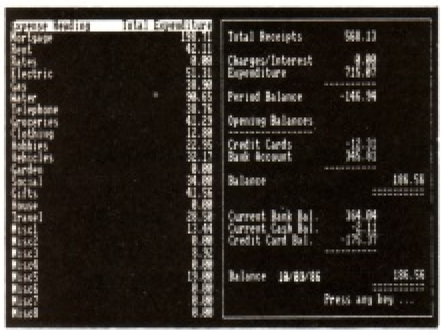
Clear your desk's clutter!

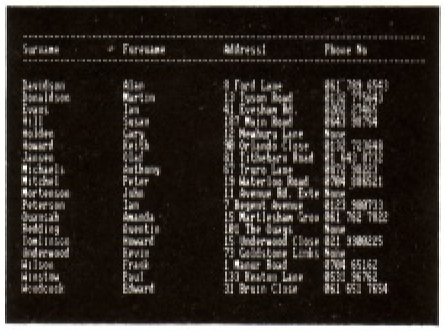












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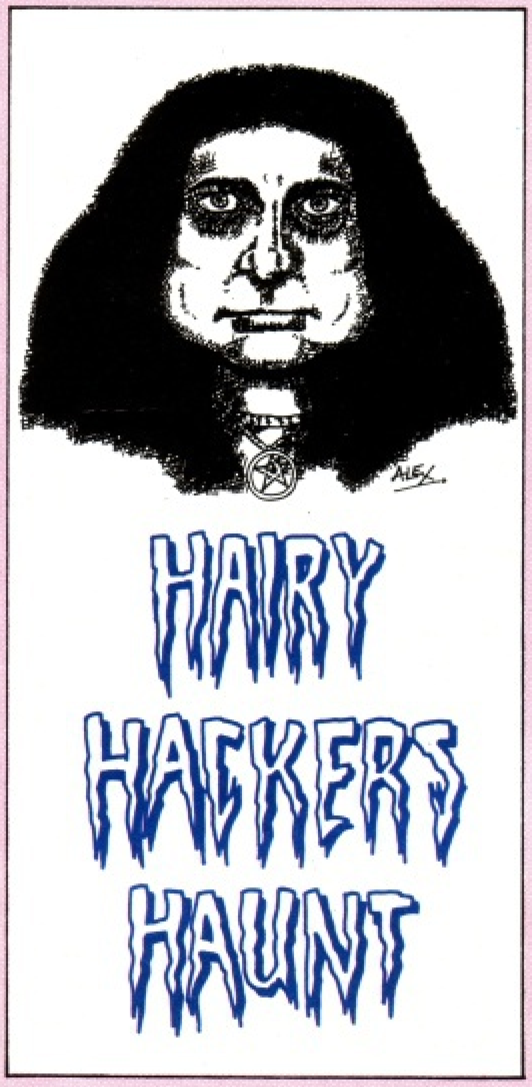
Name

Address

Signature

ACU12

Better blasting



Vyk is Vax – and here's his hacks

Happy day! And now the bad news: My computer's not been at all well recently. Its discs have slipped, the disc drive's crashed, the dreaded GOSUBs have returned, the print-head has dandruff, the printer itself was sacked by Murdoch, the cursor's worn and the light pen has put on weight. Even the manuals have had appendixitis.

It hasn't all been bad news though, someone has just released a word processing book for secretaries. It's called: The Joyce of Secs.

To make my day, Mr. R. Moore has written in to say that on the 464, putting in lines like:

20 REM CIRCLE

translates itself to:

20 REM *CIRCLE

and doesn't run properly. The word on this little number is that it is one of those undocumented features that us programmers make fortunes out of patching round. To avoid this, don't put bars, pound signs and so on in rem statements. That's known technically as a cop-out.

I'm sure that this yur poke has appeared somewhere before, but I can't find it and it's something some people will enthuse over anyway. This is a pokeyette from Stephen Hulley in Hemel Hempstead, who has poked at Bounty Bob Strikes Back. This is one of the games I haven't seen, so this'd better work Steve!

```
10 REM BOUNTY BOB STRIKES BACK !
20 REM AMSTRAD CPC 464 ETC
30 REM INFINITE LIVES
40 REM STEPHEN HULLEY 1986
50 MEMORY &3900:CLS
60 LOAD"":LOAD"!",&4040
70 A=&8900
80 FOR N=0 TO 51
90 READ D$:POKE A+N,VAL("&"+D$)
100 NEXT N
110 CLS:PRINT "Please wait."
120 CALL &8916
130 DATA 21,6E,06,36,18,2C,36,05,C3,40,0
    0,21,34,BD,36,00,2C,36,89,C3,04,BD
140 DATA F3,11,40,00,21,00,BB,01,37,02,D
    5,E5,C5,78,21,4B,40,36,72,2E,4E,36
150 DATA 92,6C,ED,B0,37,C3,2C,B8
```

Figure 1

Rewind your Bounty Bob tape to the beginning and RUN that lot. On screen distructions will appear.

In future, would anybody sending in a poke of over half a dozen bytes please put it on about eight bytes per line and with a flippin' checksum on the end of it. This makes it much easier for me and the punters to type in. Threat over, back to the column.

Slick screen shifting

James of Yoxall has asked me for advice on writing sprite routines. Well Jim lad, yer got the wrong fella. But since you wrote in you'll get some advice.

The first way to make it appear as if you're doing a lot of work when you're not is to shift the screen around the shape instead of the shape around the screen. This is demoed (is that an English word?) by the following program.

This shifts the screen around the easy way – it lets the screen controller do all the hard work. The program adjusts the vertical and horizontal offsets of the screen. The chequered background does not actually stay still, but it looks like it and illustrates the principle.

```
100 REM ***
110 REM *** Bouncing screen demo by
120 REM *** The Hairy Hacker and a
130 REM *** small furry creature from
140 REM *** the Crab Nebula.
150 REM ***
160 REM
170 MODE 1
180 INK 3,6,18:'Only for non-epileptics.
190 FOR i=0 TO 640 STEP 16
200 MOVE i,0:DRAWR 0,400
210 NEXT i
220 FOR i=0 TO 400 STEP 16
230 MOVE 0,i:DRAWR 639,0
240 NEXT i
250 LOCATE 1,26:PRINT
260 MOVE 0,0:DRAWR 640,0
270 FOR i=0 TO 640 STEP 16
280 MOVE i,0:DRAWR 0,16:NEXT
290 WINDOW #1,15,25,12,14
300 PAPER #1,3:CLS#1
310 LOCATE 16,13:PRINT "Booinng !"
320 x=0:y=0:yi=1:xi=1
330 LOCATE 1,26
340 CALL &BD19
350 n=45665+x+y*40:OUT &BC00,12:OUT &BD0
    0,INT(n/256)
360 OUT &BC00,13:OUT &BD00,n-INT(n/256)*
    256
370 x=x+xi:y=y+yi
380 IF x=0 THEN xi=1:GOTO 400
390 IF x=29 THEN xi=-1
400 IF y=0 THEN yi=1:GOTO 340
410 IF y=22 THEN yi=-1
420 GOTO 340
```

Figure 2

Lines 100-240 set up the screen and an optional flashing ink.

Lines 250-290 scroll in some screen memory that isn't on the screen to start with and fills it with the same pattern as the rest of the screen.

Lines 300-330 create a little shape to bounce about.

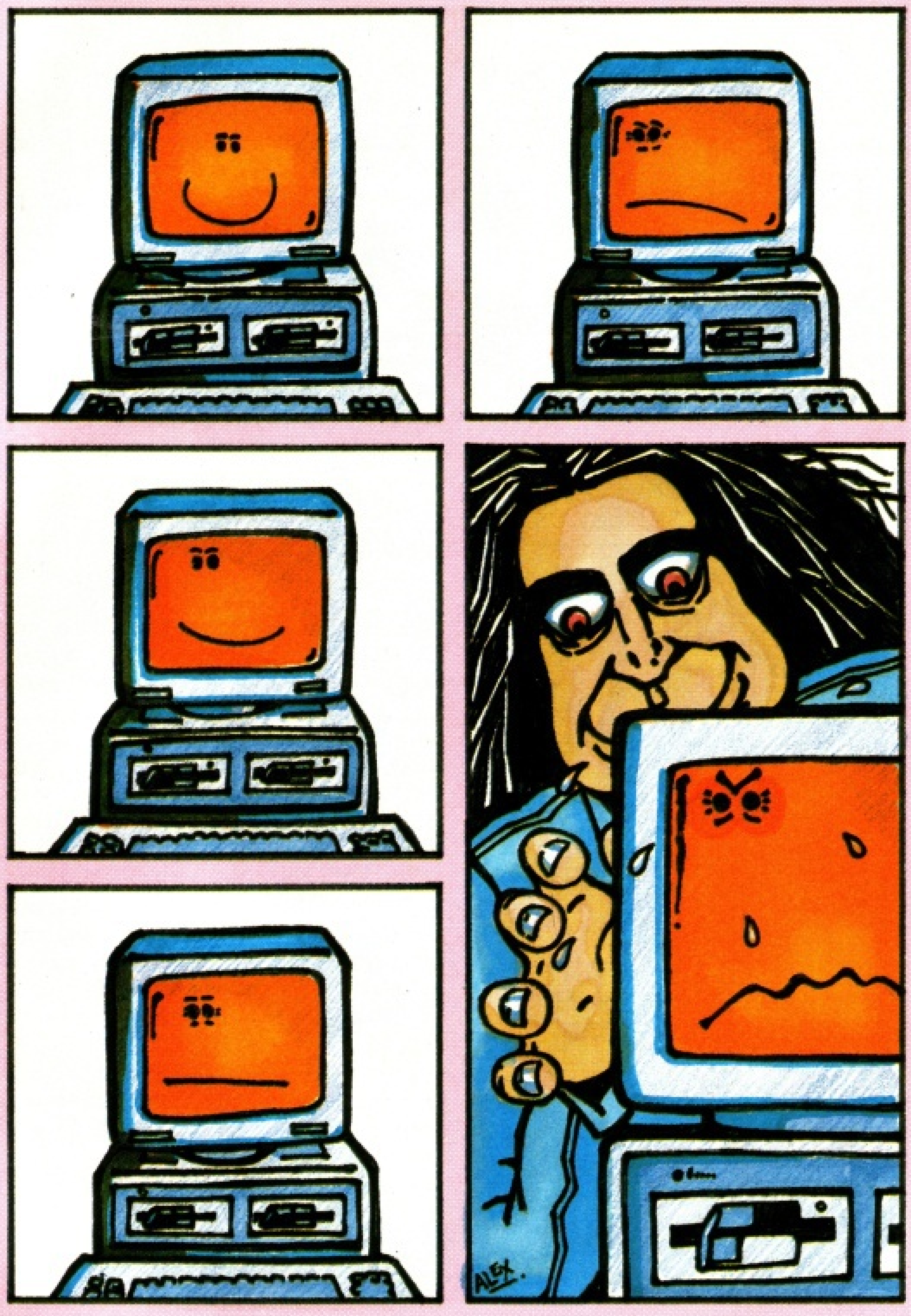
Lines, 340 onwards move the two pointers (12 & 13, but you can use the firmware call) that the graphics chip uses to tell what part of memory to look at.

The second way to prevent your large sprite from flickering like an expiring subway light is to have two screens on the go at the same time. As well as the normal screen we all know and love, there is a second one that can happily live at &4000 in the memory map.

If you have both screens alternately displayed and only update the one that isn't showing, the effect will be a flicker-free display.

This is especially effective if you swap screens on every other frame flyback (the period between individual TV pictures), effectively giving you much more time for your cranky old sprite routine to update things.

This is not as difficult as it looks (especially to 6128 owners who have read



up on BANKMAN) and here's how:

```
10 REM ***
20 REM *** How to screen switch by a
30 REM *** small furry creature from
40 REM *** the Crab Nebula and the
50 REM *** Hairy Hacker.
60 REM ***
70 REM
80 FOR i=1 TO 5:READ a:POKE HIMEM+i,a:NE
   XT
90 DATA &3E,&40,&c3,8,&bc
100 MODE 1
110 FOR i=1 TO 24:PRINT STRING$(40,"1");
    :NEXT
120 PEN 2
130 CALL HIMEM+1
140 MODE 1
150 FOR i=1 TO 24:PRINT STRING$(40,"2");
    :NEXT
160 PEN 1
170 x=&40
180 WHILE INKEY$="":WEND
190 POKE HIMEM+2,x:CALL HIMEM+1
200 IF x=&40 THEN x=&C0 ELSE x=&40
210 GOTO 180
```

Figure 3

There, that will show a screen full of ones and a screen full of twos. When you tap on the spacebar with your little paws, it will switch between screens so fast it'll make your eyes water.

That is the way it is done on most games with big moving scenes, if they can afford the 16k of memory that the second screen takes up.

The important call to look up in the manual is SCR_SET_BASE. All the poked code does is send 40 or C0 hex to that routine, telling it which screen you want.

You will notice that yours truly has used a few evil-looking OUTs in his first program. This is only because it gets very confusing when you start trying to stuff lots of registers to fly firmware routines directly from Basic.

You may also wonder what the CALL &BD19 is doing. This is the only firmware call that is mentioned in the beginners manual. All it does is twiddle its thumbs until the monitor is starting a new picture. Try leaving it out, and spot the difference.

In the event of real programming, I would recommend using SCR_SET_OFFSET and friend routines out of the firmware manual. This is partly because of compatibility, but mostly 'cos I'm a lazy so-and-so and they do all the complicated calculations for you. If you haven't got the firmware manual yet, and you're programming in machine code – get it!

Colourful characters

Among other interesting letters in the mailbag were TSB prospectus, begging letters from gas and electricity board, a phone bill with the number only just smaller than the figure in red, and the following quiz from Richard of Nottingham, curiously covered in garlicy French salad dressing.

He asks: How do poor people whanging away in Basic manage to print glorious technicolour characters with the SYMBOL command?

Well, the magic isn't in the symbol command. Instead you put PRINT CHR$(22)+CHR$(1); at the start of your program and then you can print things on top of one another. Then it's just a case of changing pen colours for the desired effects. Told you it was simple.

Just as easy is returning things to normal: PRINT CHR$(22)+CHR$(0);

More joystick japes

Now details on how to cheat with a Cheetah. The one in question is the Cheetah Mach I joystick (a sound device!), with added microswitches.

This doesn't mean that they've made the fire buttons smaller but that they use some very durable switches in it that have the unfortunate side effect of clicking all the time. This makes a decent blasting session sound like an old Telecom/Meccano telephone exchange freaking out.

The strange thing is that the only non-microswitch switches are the handle fire buttons. These are usually the first ones to succumb to the tender ministrations of vibrating, sticky digits. Humm ...

Any road up, I can't tell you how to kill the clicks but I can give the usual second fire button hack for it. As usual, any problems you have are your own and we advise you to read through the instructions first.

Unlike the previous hacks, the fire buttons we're going to convert are on the base, so there's no need to take the handle apart.

First off you'll need a length of

stranded (no, not on a desert island), insulated wire about a foot longer than the cable. Wrap this round the cable now, before you start swinging dismantled chunks of joystick about.

Remove the four screws from the base with a trusty (or rusty) cross-head screwdriver. Ensure you count all four (some roadies can't count that far) and place them in your equally trusty Rolls-Royce hubcap (quieter than a Porsche), Guiness ashtray, wok or handy belly-dancer's navel.

When you prise the two halves apart a little black bit will fall off the auto-fire switch. Catch it, even if the auto-fire doesn't work on Amstrads.

At the front end (where the cable goes in) are two microswitches (the big green things) linked up by clips and lengths of orange and black wire. Prise the front two out of their little plastic holders and disconnect one or both of them from the orange wires by pulling the clips off.

Take the end of the wire close to the base and strip about an inch with teeth, wire strippers or one of those things you usually slice your thumb on.

Thread the bare end through the hole in the tab of the microswitch(es) you have disconnected. Make sure you connect up the tabs marked NO, or you'll get more second fire than you bargained for.

Once the microswitch(es) are/is well and truly trussed up, put the thing(s) back again and turn your attentions to the small lump on the other end of the cable.

Bare the end of the wire as before, but only a quarter inch this time and without slicing the thumb.

The hole that you want to poke this wire in is shown in Figure 1, reproduced from the first Hairy Hackers with the kind permission of nobody in particular.

Nearly there. Tape the wire to the plug with insulating tape, gaffer tape, cellotape or anything that stops it flapping around in the wind and insert plug in the relevant orifice on your 'straddy.

Turn on the power and push switches. Base microswitches should produce capital Zs only, handle buttons Xs only and other switches ↑↓ ←— —→ in predictable sequence.

If this works, screw it all back together again. If not, think hard about whether this was a good idea in the first place, or whether pushing the buttons on top when you've taken the switches away from underneath should do anything.

Notice that throughout this wee hack there have been no wires cut. This pleases the ed immensely, 'cos he'll probably want his stick back later. Unfortunately this won't cut any ice with Mr.Cheetah. After this your guarantee will be declared well and truly void.

I just seem to have suffered from a stack overflow. The stack of discs I put on top of my Joyce flowed over the back and on to the floor. Again!

A potion for Druid

Justin Garvanovic seems to produce pokes the minute a game arrives in the shops. Here is a program which provides infinite energy, spells, keys, invisibility, golems and chaos for Druid. This deletes the rating bar but it isn't needed. Either rewind to the start of the tape or fast forward past the first file then run the routine.

```
10 MODE 1:MEMORY 12345
20 PRINT "LOADING..."
30 LOAD "!druid1",&6400
40 WINDOW#1,15,27,10,10
50 WINDOW]#2,15,27,13,13
60 tot=0
70 FOR n=&800 TO &85F
80 READ a$:a=val("&"+a$)
90 POKE n,a:tot=tot+a
100 NEXT
110 IF tot<>7717  THEN PRINT "Whoops, so
    mething wrong with the data.":END
120 CALL &800
130 DATA 2a,38,bd,22,60,08,2a,01
140 DATA bb,22,38,bd,3e,f7,32,0e
150 DATA bc,3e,c3,21,1f,08,32,30
160 DATA 00,22,31,00,c3,00,64,2a
170 DATA 60,08,22,38,bd,cd,37,bd
180 DATA 3e,f7,32,ba,0f,3e,c3,21
190 DATA 3e,08,32,30,00,22,31,00
200 DATA cd,00,23,c3,00,0f,af,32
210 DATA 01,2c,32,ee,30,32,8a,28
220 DATA 32,49,26,32,e1.28,3c,32
230 DATA c8,27,32,ca,27,32,cb,27
240 DATA 3e,c9,32,51,45,c3,3e,1e
```

Figure 4

Guzzle some more

This poke, also from Justin, provides infinite lives for Players Guzzler.

```
10 MODE 1:MEMORY 12345
20 LOAD ""
30 tot=0
40 FOR n=&BE72 TO &BE92
50 READ a$:a=VAL("&"+a$)
60 POKE n,a:tot=tot+a
70 NEXT n
80 IF tot<>3500 THEN PRINT "I detect an
   error, better check.":END
90 CALL &BE72
100 DATA 21,80,be,3e,c3,32,bc,bc
110 DATA 22,bd,bc,c3,05,40,cd,37
120 DATA bd,21,00,00,22,6e,56,22
130 DATA 70,56,7d,32,5b,61,c3,ba
140 DATA 67
```

Figure 5

More force to your Lightforce

The final poke from Justin furnishes you with infinite lives in Lightforce. Rewind the tape to the start and run the routine.

```
10 MODE 1:OPENOUT "d":MEMORY 1234
20 LOAD""
30 FOR n=112 TO 118
40 READ a$:POKE n,VAL("&"+a$)
50 NEXT n
60 POKE 1602,195
70 POKE 1603,112
80 POKE 1604,0
90 CALL 1500
100 DATA af,32,da,79,c3,31,73
```

Figure 6

Fixed Galaxians

In the Rookie/Neophyte Hackers letters selection this month we have some alterations to make to the games that get published in the magazine. Before hacking at them, please make sure that the thing works in the first place, all right?

The first re-write comes from a Mr. (scriblescrawl) Flint of Calside. He suggests the following mod for making Galaxian Revenge listen to joystick control by changing the following bytes:

Line 1420 - 47 becomes 4A

Line 1450 - 3F becomes 4B

Line 1740 - 15 becomes 4C

There, all the bytes mentioned are after the 3E and before CD,1E,BB. Seasoned 'straddy hackers will already have noticed that this is the "test a key" call. You'll probably have to ignore the checksum on this, as the changes will muck it up somewhat. The error can safely be ignored, 'cos you tested it in the first place, didn't you ?

Mr. Flint also sent in a Nightshade-to-disc program, which has been declared unfair on Ultimate by the ed., and so disappears into the Big Black File to come out after the glorious revolution. *(No writing in and pleading for it either – Cruel Ed.)*

Colin Findlay sent in a Rambo poke – too late, see last month's issue. But also a poke for The Last V8, which did make it in time:

```
10 MODE 0
20 OPENOUT "DUM":MEMORY 1799:CLOSEOUT
30 LOAD "!A"
40 LOAD "!B",49152
50 LOAD "!C",12800
60 LOAD "!D",1800
70 FOR N=0 TO 15:INK N,":NEXT N
80 LOAD "!E",49152
90 POKE 1908,0:POKE 1909,0:POKE 1910,0:P
   OKE 1911,0:POKE 1912,0
100 CALL 1809
```

Figure 7

Rewind your V8 tape, RUN the above pokeyette and push the play key.

Do you realise that the Hairy Hackers column depends on people like you sending in little pokes and twiddles that you as a real, creative person find useful in some perverse/obscure way?

If you are in possession of such items, we suggest that you send your contribution (however large) to: The Hairy Hacker, c/o ACU. (Address printed in the front of the flippin' magazine – you look it up.)

Oh, before I go, did anyone spot the deliberate mistake in last month's issue? The whole magazine was printed upside-down!

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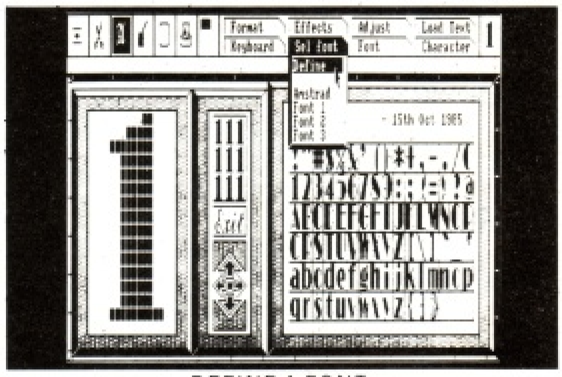
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The method to master Mekon's missile

Dan Dare, the most exciting game to hit earth – Virgin should go public on the strength of it alone – got a rave review last month. Yet some of you may be finding it a bit complicated to guide Dan through his perilous mission to stop Mekon's asteroid destroying the world.

So we've come up with a map and a poke to help you and Dan overcome the evil forces of the universe. See the route he'll have to take and the obstacles the team will have to overcome in order to stand any chance of preventing the globe going green.

The poke to provide infinite lives may cause some corruption, but then the Mekon always was pretty corrupt. Due thanks go to Justin Garvanovic for this routine.

```
10 MODE 1:REM DAN DARE POKE
20 MEMORY &2000
30 LOAD "!",&2040
40 tot=0
50 FOR n=&BE00 TO &BE33
60 READ a$:a=VAL("&"+a$)
70 tot=tot+a:POKE n,a:NEXT n
80 IF tot<>5718 THEN PRINT"Oh dear, bett
   er check the data.":END
90 CALL &BE00
100 DATA f3,21,80,20,11,a0,be,01
110 DATA 30,01,7e,ee,a0,12,23,13
120 DATA 0b,78,b1,20,f5,3e,f7,32
130 DATA f4,be,3e,c3,21,28,be,32
140 DATA 30,00,22,31,00,c3,a0,be
150 DATA af,32,c3,77,c6,c9,32,58
160 DATA 7c,c3,8c,6e
```

Dare you win Dan's delights?

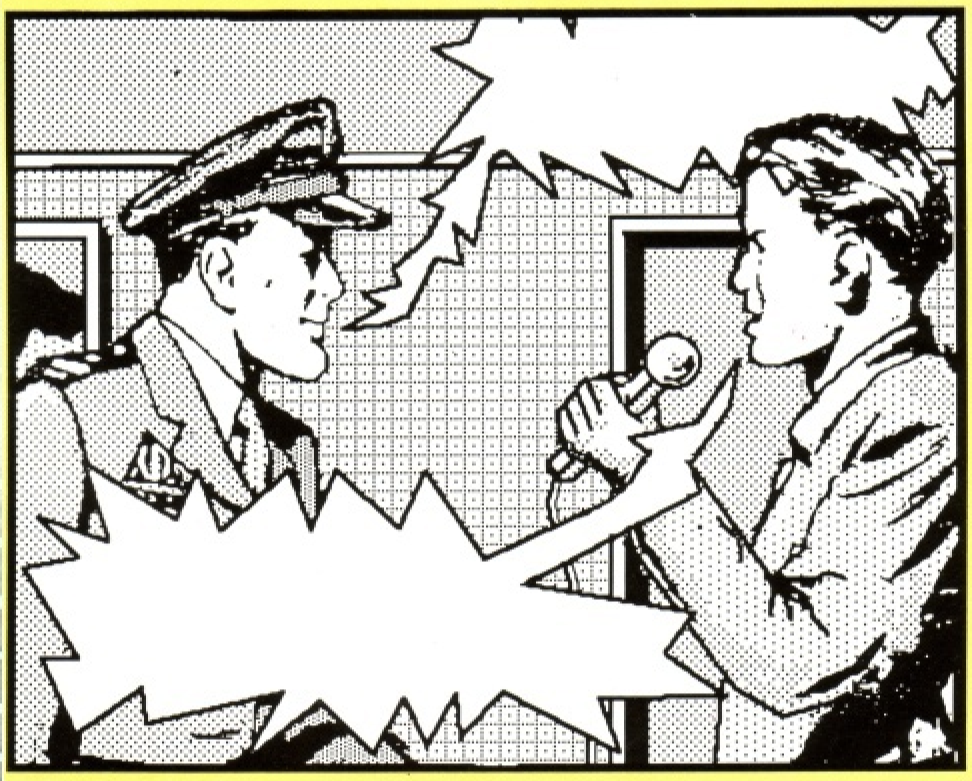
If you were as impressed by Virgin Game's Dan Dare as we were you'll be eager to win one of the five Dan Dare T-shirts,(like the Ed wears). They are very special since Virgin were only allowed to have 150 made. And there are posters, and biographies of Dan's creator, Frank Hampson.

This jolly bundle could be yours if you supply one of the five wittiest, sharpest, replies from our death defying saver of the earth's people, in the space on the picture below.

Rules:

1. Senders of the five wittiest entries chosen on December 22 will each receive a T-shirt, poster and book.
2. You may photocopy the form but only one entry is allowed per reader.
3. The judge's decision is final. No employees of *ACU (Huh! - Ed.)* may enter.

Dan Dare entry form



Name ____________________

Address ____________________

____

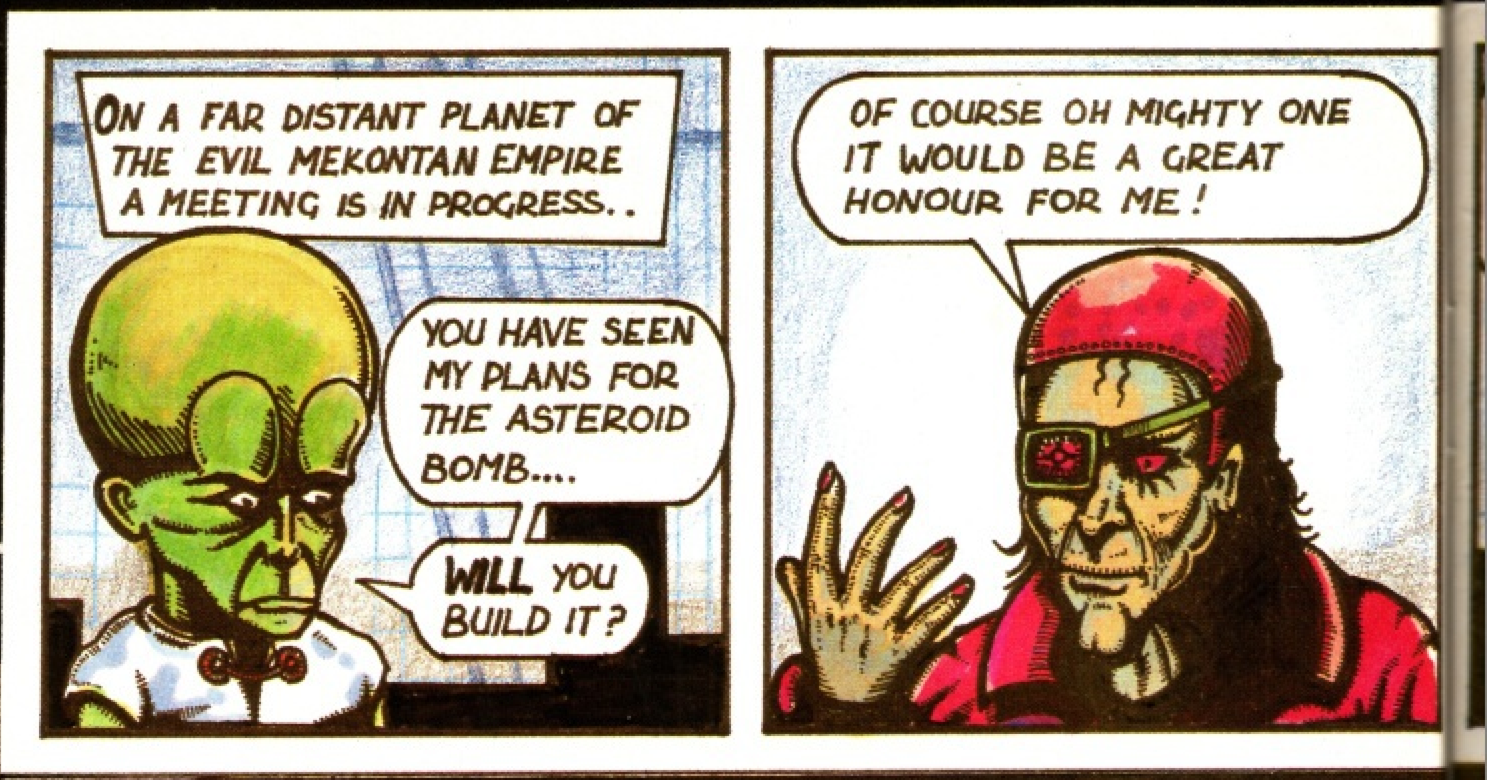
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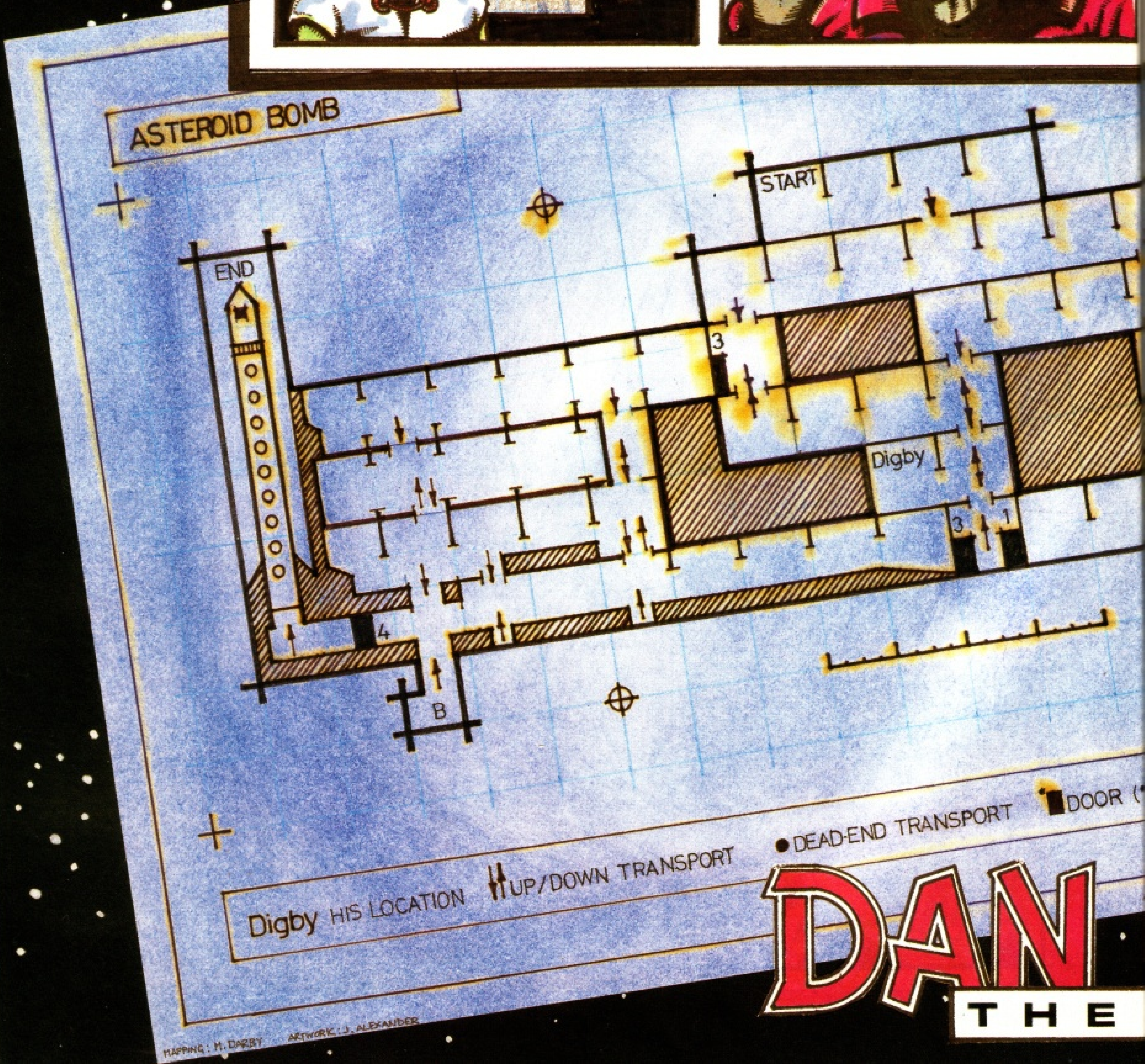
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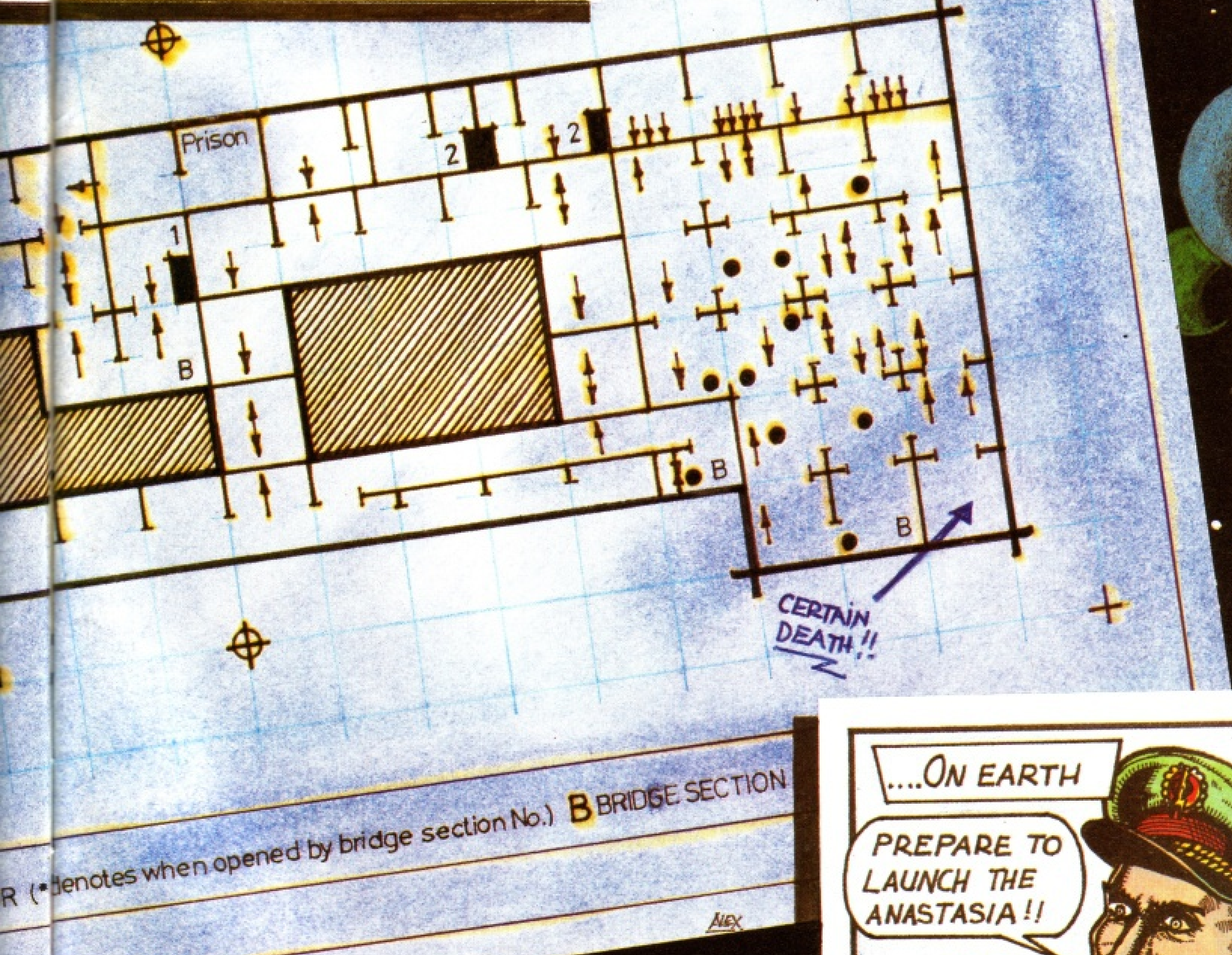
Send your entry to:
Dan Dare Competition,
Amstrad Computer User,
169 Kings Road, Brentwood,
Essex CM14 4EF.


ON A FAR DISTANT PLANET OF THE EVIL MEKONTAN EMPIRE A MEETING IS IN PROGRESS..
YOU HAVE SEEN MY PLANS FOR THE ASTEROID BOMB....
WILL YOU BUILD IT?
OF COURSE OH MIGHTY ONE IT WOULD BE A GREAT HONOUR FOR ME!


ASTEROID BOMB
START
END
Digby
3
3
1
4
B
Digby HIS LOCATION
UP/DOWN TRANSPORT
DEAD-END TRANSPORT
DOOR
MAPPING: M. DARBY
ARTWORK: J. ALEXANDER

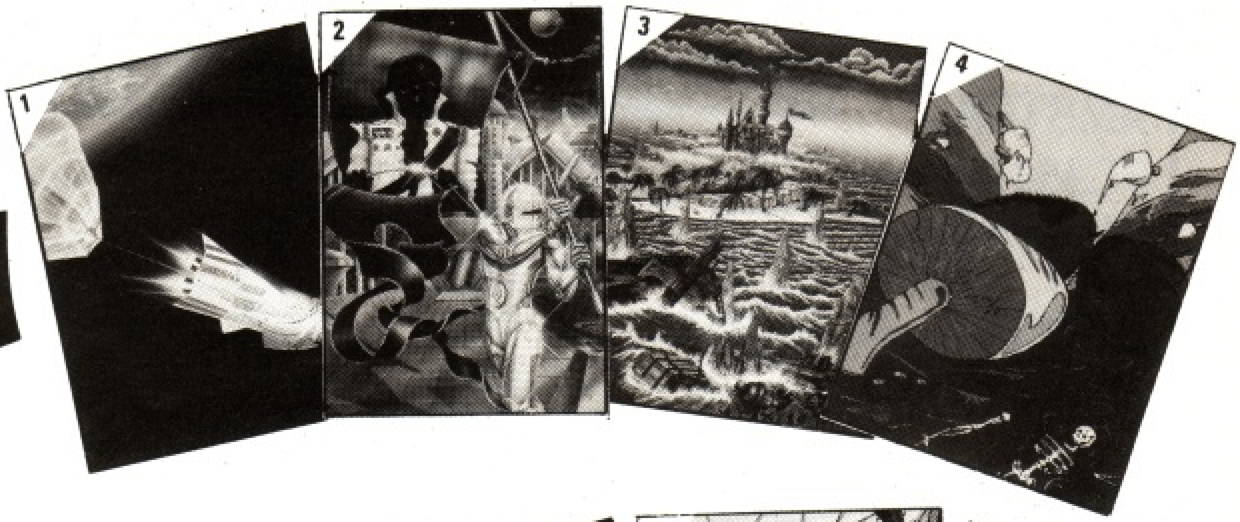
DAN
THE


GOOD! NOW I CAN DESTROY THE EARTH AND RID MYSELF OF THE CURSED DAN DARE FOR ONCE AND FOR ALL!!


Prison
1
2
2
B
B
B
CERTAIN DEATH!!
R (*denotes when opened by bridge section No.) B BRIDGE SECTION
ALEX


....ON EARTH
PREPARE TO LAUNCH THE ANASTASIA!!

DARE
E MAP



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c) Red Moon
d) Emerald Isle
e) Lords of Time
f) Return to Eden
g) Snowball
h) Dungeon Adventure
i) Adventure Quest
j) Colossal Adventure.

Rules:

1. All entries must be in by December 22.
2. The judge's decision is final.
3. Only one entry is allowed per reader, but you may photocopy the form.

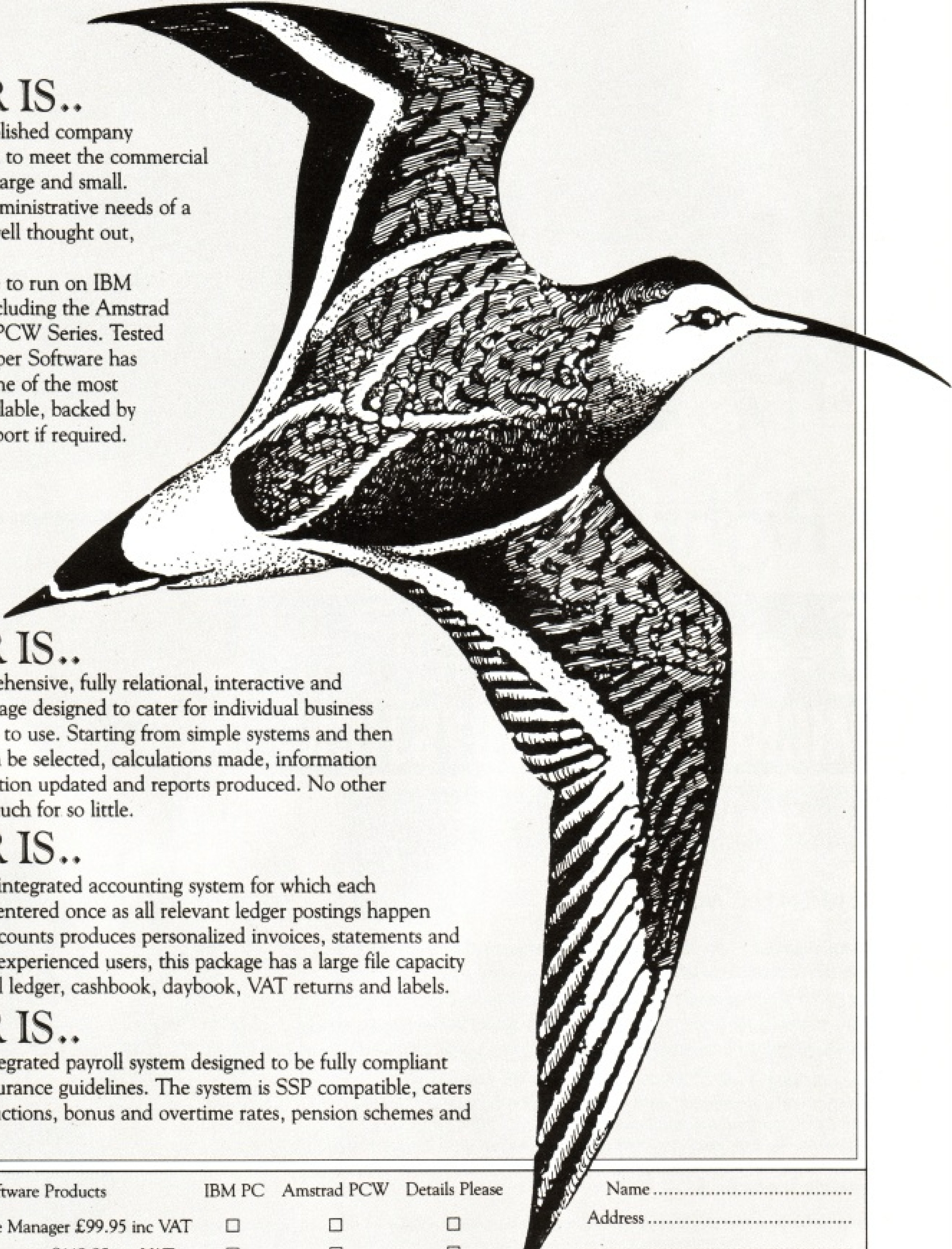
CALENDAR CONTEST ENTRY FORM

Answers

1.	6.	Name ....
2.	7.	Address ....
3.	8.	....
4.	9.	....
5.	10.	....
		....
		....

Send to: ***Calendar Competition, Amstrad User, 169 Kings Road, Brentwood, Essex CM14 4EF.***

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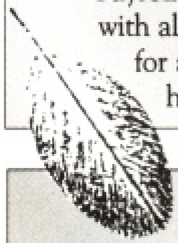
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Questions

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3. Which muscles contract when you lower your arm?

Rules:

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2. You may photocopy the form but only one entry is allowed per reader.
3. The judge's decision is final. No employees of *ACU* may enter.

ROBOT ARM ENTRY FORM

Answers

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2. ....

3. ....

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....

....

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Make it easy on yourself

Peter Green offers tips on using an assembler and a sort subroutine module that leaves Basic for dead

With any luck I've persuaded you that machine code is not the esoteric black art it's generally made out to be.

However, Basic programmers have the advantage that the Amstrad CPC machines come with their language resident (built in) at no extra cost. Machine coders need to buy an assembler – a program that converts easy-to-read English like assembly codes or mnemonics into the binary code that the Z80 microprocessor needs to function.

Which to buy?

Amstrad owners are spoiled for choice here, with nearly a dozen packages on the market. As far as the production of machine code goes, they all offer the same standard facilities. For example, they all allow simple expressions to be used for assignment, as in LD A,"X" which puts the Ascii code for X in the A register, or LD HL, table+10).

So your choice really depends on user-friendliness (a tired phrase but an important quality), and any luxury features of the program. For example, one (non-Amstrad) assembler I've worked with uses CTRL-E, CTRL-X, CTRL-S and CTRL-D to move the cursor around the screen – on a machine with cursor keys! Not a good buy.

My own assembler is the Maxam/ Protext combination on rom from Arnor. Maxam is the actual assembler, working on source code written with the Protext word processor.

I find this combination much easier to use than other assemblers which insist on using their own line editors, like Basic's. The rom programs are permanently resident and the range of features offered is impressive. And Arnor is very helpful with technical inquiries.

But feel free to check out the reviews in the back issues, read the ads, try a friend's package or ask for a demonstration.

By the numbers

Sharp-eyed Basic programmers will have noticed the absence of line numbers in my examples. Well, why does Basic use line numbers?

Firstly, when writing in Basic, the editor uses the line number to insert the line at the correct place in the program. Some old-fashioned assemblers still insist on using a similar system, but with a word processor-style editor you can insert code easily.

Secondly, line numbers are convenient for specifying where the program has to jump when it encounters a GOTO or GOSUB instruction.

Of course, if GOSUB 500 executes a routine to clear the screen, then being able to type GOSUB clear-screen would make the program a lot easier to understand. The text "clear-screen" is called a label. In assembler, this is exactly what we are able to do – which is just as well, because the machine code equivalent of line numbers for jump control are signed offsets and memory addresses.

These would be a real pain to work out by hand, but the assembler does all the necessary calculations for us.

Ch-Ch-Ch-Changes

Labels make the alteration of an assembler program much easier. Consider the Print subroutine I gave you last month – it works fine but there are disadvantages.

For example, it needs the length of the string in the B register. This means that, like Basic, we can only have strings up to 255 characters in length, the largest number that will fit into a single 8 bit register. And we need to know how long the string is before we print it.

Also, remember how limited a number of registers we have on a microprocessor. Can we avoid the use of B altogether, freeing it for some other duty?

Listing 1 shows the old print subroutine, and Listing 2 is a similar routine that does not require the length of the string to work. Instead we choose an Ascii character code which we will never want

```
           LD HL,string    ;The assembler works out the actual address of the label 'string' as a 16-bit number
           LD B,5          ;We know the string is five characters long
           CALL print      ;This is a subroutine that prints B characters starting from address in HL
           RET             ;Go back to wherever we called this routine from
.print     LD A,(HL)       ;Get a character from the address pointed to by HL
           CALL &BB5A      ;Call the firmware subroutine to print a character on screen
           INC HL          ;Increment (add one to) HL to point to next character
           DEC B           ;Decrement B, the loop counter
           JR NZ,print     ;IF B did not reach zero, THEN there are more characters to print. Go do it.
           RET             ;ELSE B is zero, so we've printed five characters and finished. Return to
                           ;where we called this subroutine.
.string    TEXT "Hello"    ;the message to be printed
```

Listing 1

```
           LD HL,string    ;The assembler works out the actual address of the label 'string' as a 16-bit number
           CALL print      ;This is a subroutine that prints a string of characters starting from address in
                           ;HL and ending in a null (0)
           RET             ;Go back to wherever we called this routine from
.print     LD A,(HL)       ;Get a character from the address pointed to by HL
           INC HL          ;Increment (add one to) HL to point to next character
           OR A            ;Was character a zero, flagging the end of the string?
           RET Z           ;IF so, THEN we've printed all the characters. Return to where we
                           ;called this subroutine.
           CALL &BB5A      ;ELSE call the firmware subroutine to print a character on screen
           JR print        ;Go get next character from string.
.string    TEXT "Hello",0  ;the message to be printed
```

Listing 2



to print, and use it as an end-of-string marker. The print routine then works along the string, thousands of characters long if we want, stopping only when it finds the special character.

I've chosen a zero because zero is very easy to test for in machine code and isn't a very useful Ascii character – but there's no reason why you couldn't use &FF (255) or any other code.

Suppose we had made this change and had to work out the addresses of subroutines and data by hand. Both print subroutines happen to be nine bytes long, but the LD B,5 instruction no longer needed in Listing 2 saves two bytes. So all the addresses after it, like that of the routine print and the data string have changed.

In a big program it would be a terrible job to re-calculate and alter by hand all the addresses every time you made a change to the program. The assembler takes care of all this when it generates the machine code, noting which addresses the labels refer to and inserting them into the machine code in the correct binary format.

It's just an expression

Labels have other uses besides identifying the addresses of subroutines, jumps and data. They can be used in expressions to relieve you of other monotonous calculations.

Suppose you write a game with a lot of variables which have to be initialised to some set of fixed values at the start of a level. You could keep them together as two blocks, the initial and working sets, and copy the former into the latter at the start of each level.

This means you need to know the length of the data block, but don't count the bytes yourself! Label the start and end of the table, and use something like:

```
LD BC,table-end-table-start
```

so that the assembler does all the hard work for you.

Labels can also be used to replace fixed values of data or addresses to improve the readability of the program or make modification easier. The assembler has an equate command, EQU, to allow this.

So if you're writing a word processor program which word-wraps text (that is, moves a whole word on to the next line rather than splits it), you'll probably be using the width of the screen a lot in calculations. Putting a line:

```
width EQU 80
```

in your source code means you can write width instead of 80 throughout the program, just like defining a constant in Basic. The program will be much easier to understand – and when you decide to convert it to the PCW 8256 with its 90-column screen you simply alter the line to:

```
width EQU 90
```

Much better than trying to find and alter every occurrence of the number 80 in the program, isn't it?

The good label guide

The only trouble with labels is that, unlike line numbers, you have to think them up. A good assembler will allow long labels which can be descriptive and improve readability, but older assemblers limit labels to six characters. With these you can't use MOVE-STRING, only MOVSTR, which is better than a line number but not much.

With so few functions available in machine code the assembly programmer needs to build up a basic library of useful routines or modules, such as the string print in Listing 2. These can be written once and incorporated in future programs.

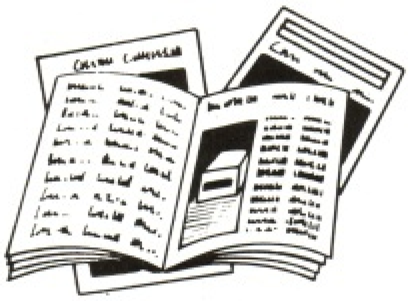
I tend to use a good descriptive (and if necessary, long) label at the entry point to the module, then numbered, possibly abbreviated labels within the routine. For example, a module called LOAD-

Your key to communications!

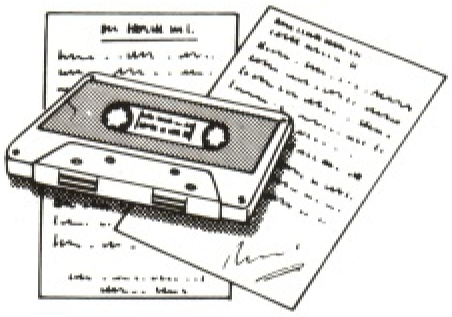
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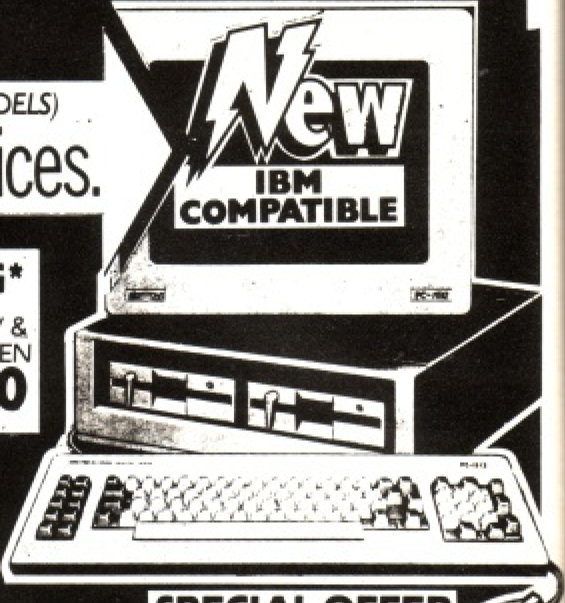
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```
.sort                                  ;enter with HL=no. of strings in list, DE=list start
              LD A,H                   ;LET A = H
              OR L                     ;LET A = A
              OR L                     ;(so A=Ø if and only if H=Ø and L=Ø)
              RET Z                    ;IF no. of strings = Ø THEN RETURN
              LD (list_length),HL      ;ELSE initialize listlength counter to no. of strings
.sort1        LD HL,(list_length)      ;LET HL = list_length
              DEC HL                   ;LET HL = HL-1
              LD (list_counter),HL     ;LET list_counter = HL (initialise string counter)
              LD A,H                   ;LET A = H
              OR L                     ;LET A = A
              OR L
              RET Z                    ;IF list_length = Ø THEN RETURN (because list has only one string)
              PUSH DE                  ;ELSE save list start
              EX DE,HL                 ;LET HL = DE, LET DE = HL (making HL = start of list, a fake 'second string' to
                                       ;allow sort2 to work correctly)
              LD B,Ø                   ;LET B = Ø (zero the pass exchange flag)
.sort2                                 ;here HL=pointer to second string of pair
              LD D,H
              LD E,L                   ;LET DE=HL (pointer to new first string in pair)
.sort3                                 ;move second-string pointer to next string in list
              LD A,13                  ;LET A = 13 (marker byte test value, carriage return)
              LD C,Ø                   ;LET C = Ø (zero the current exchange flag)
.sort4        CP (HL)                  ;compare string character to A, which is 13
              INC HL                   ;point to next character in string
              JR NZ,sort4              ;IF character <> 13 THEN GOTO sort4
              PUSH DE                  ;ELSE save new first-string pointer
              PUSH HL                  ;save new second-string pointer
.sort5         LD A,(DE)                ;LET A = character from first string
              CP (HL)                  ;compare with character from second string
              JR NZ,sort6              ;IF A <> character THEN GOTO sort6 (with carry set if second>first)
              INC DE                   ;ELSE LET DE = DE+1
              INC HL                   ;LET HL = HL+1 (point to next character in each string)
              CP 13                    ;have we reached the end-marker of the first string?
              JR NZ,sort5              ;IF character <> end-marker (13) THEN GOTO sort5
              SCF                      ;ELSE LET carry=1 (flag second>first, as second longer than first)
.sort6        POP HL                   ;LET HL = old second-string pointer
              POP DE                   ;LET DE = old first-string pointer
              JR C,sort7               ;IF carry = 1 THEN GOTO sort7 (second>first, so no exchange needed)
              EX DE,HL                 ;ELSE LET HL = first-string pointer
              LD DE,temp               ;LET DE = pointer to safe temporary storage area
              PUSH DE                  ;save swap area pointer
              PUSH HL                  ;save first-string pointer
              CALL move_string         ;move first string into temp, including end-marker
              POP DE                   ;LET DE = pointer to first string (here HL = start of second string)
              CALL move_string ;move second-string to first-string position
              POP HL                   ;LET HL = pointer to swap area (here DE = new second-string position)
              PUSH DE                  ;save new second-string position
              CALL move_string         ;move string at swap area to new second-string position
              POP DE                   ;LET DE = new second-string position
              LD H,D
              LD L,E                   ;LET HL = new second-string position too
              LD BC,&FFFF              ;LET B = &FF (an exchange was made) LET C = &FF (current exchange flag)
.sort7        PUSH HL                  ;save new second-string pointer
              LD HL,(list_counter)     ;LET HL = string count
              DEC HL                   ;LET HL = HL-1
              LD (list_counter),HL     ;LET list_counter = HL
              LD A,H
              OR L                     ; test if string count is Ø?
              POP HL                   ;LET HL = second-string pointer
              JR Z,sort8               ;IF list_counter = Ø THEN GOTO sort8 (reached end of list)
              LD A,C                   ;ELSE LET A = C (current exchange flag)
              OR A
              JR NZ,sort3              ;IF A = Ø THEN GOTO sort3 (an exchange occurred so the first-string pointer is OK
              JR sort2                 ;ELSE GOTO sort2 (make first-string pointer = second-string pointer)
.sort8        CALL still_here          ;GOSUB still_here
              POP DE                   ;LET DE = list_start
              LD A,B                   ;LET A = B (the pass exchange flag)
              OR A
              JR NZ,sort1              ;IF A <> Ø THEN GOTO sort1 (list not sorted yet)
              RET                      ;ELSE RETURN (no exchanges were made so list is sorted)
.move_string  LD A,(HL)                ;LET A = character from source string
              LD (DE),A                ;LET destination = A
              INC HL                   ;LET HL = HL+1
              INC DE                   ;LET DE = DE+1
              CP 13                    ;test for end_of_string marker
              JR NZ,move_string        ;IF A <> 13 THEN GOTO move_string
              RET                      ;ELSE RETURN because the string has been moved
.still_here   LD A,"."                 ;LET A = ASCII code for dot
              CALL txt_output          ;GOSUB txt_output (print a dot to reassure the user)
              RET                      ;RETURN
.txt_output   EQU &BB5A
.temp         RMEM 3Ø ;some assemblers may need DEFS 3Ø to reserve 3Ø bytes of memory
```

FILE would have internal labels LF1, LF2, LF3 and so on.

Modules should be as general purpose as possible so they can suit many programs by passing them suitable parameters. The Complete Firmware Specification (Amsoft SOFT 968) is essential reading for Amstrad machine coders and demonstrates clearly what I mean by passing parameters to routines.

So does our giveaway subroutine for this month. Listing 3 is a bubble sort routine which puts any list of text strings into ascending order. This is a job which would cure insomnia if you tried it in Basic, but is reasonably fast in machine code.

Each string in the list must be terminated by a carriage return character, Ascii code 13.

To use the routine simply load the address of the start of the list in DE, the number of strings in the list in HL and CALL sort. On exit, the list is sorted.

A bubble sort works by scanning through a list comparing each successive pair of entries. If a pair are in order nothing happens, otherwise they are swapped over so that entries gradually drift into their proper places in the list. When a complete pass is made through the list without any swaps taking place the sort has been completed.

If you play with a short list with paper and pencil you'll see that a bubble sort gets its name from the fact that after the first pass the largest item has sunk to the bottom of the list in much the same way that bubbles don't (The Hitchhiker's Guide To Programming). Hence on each pass through the list, we can check one less entry (to save time).

The heavily commented source code, with the comments written in Basic style to help beginners, is virtually self-explanatory. To work correctly the list must have at least two entries, so first a test is made for HL being zero (empty list) or 1 (a single entry is already "sorted").

Most of the program consists of loading characters hither and thither, comparing numbers and jumping on the results of various tests. This is pretty straightforward. The only thing that Basic programmers might have problems understanding are the PUSH and POP instructions, which have no Basic equivalent.

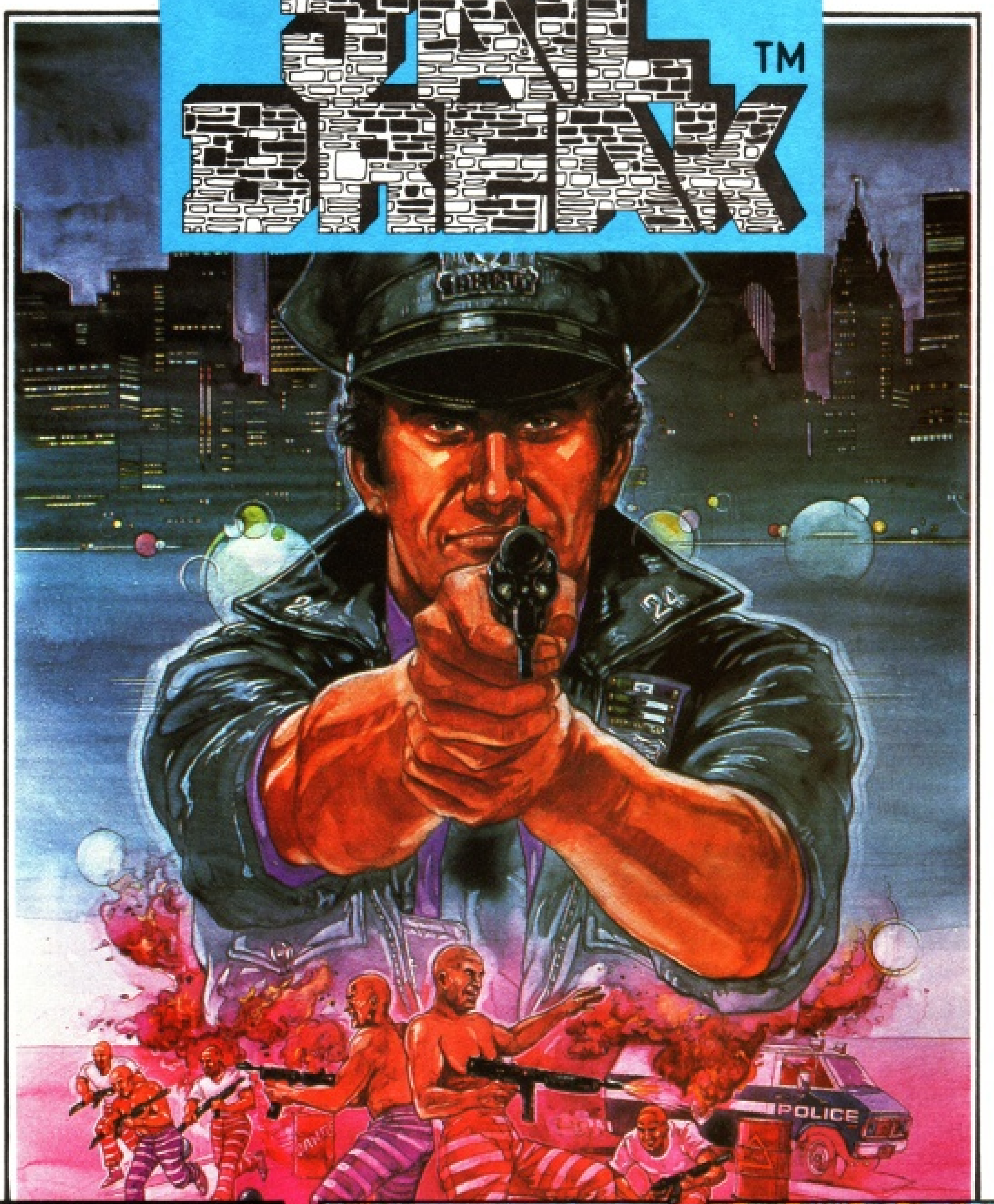
For now just think of PUSH as an instruction which takes the contents of a register pair and shoves them into a mysterious region of the universe. POP gets numbers from the mysterious region and puts them into a register pair, in the opposite order they were PUSHed (that is, the last value in is the first one out).

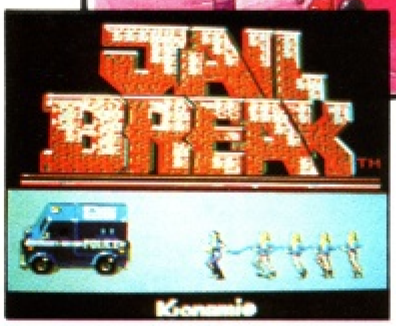
Also note the routine "still-here". This simply prints a dot on the screen every pass through the list. It has no function other than to reassure the user that, during a sort of several thousand words and several minutes, the program hasn't actually crashed! ACU

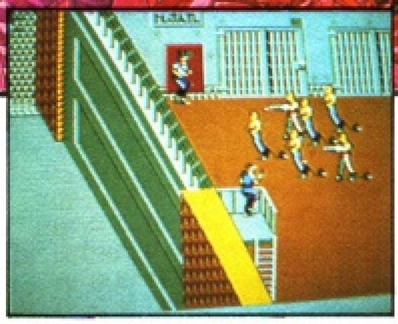


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9. Dan Dare £9.95
It would be easy to fill this section up with games but the program of the moment must be this one. Dan from the planet Virgin battles to rescue Digby.

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11. ExBasic £9.95
One for PCW owners only. Mallard Basic is a bit short on the graphics side, so Nabitchi Computing has a clever set of routines which make circles simple and lines a laugh. Just 'cos it's cheap don't underestimate this.

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the fire button league but with super quick responses and a very comfortable hand hold. Don't be put off by its appearance, this is one of the best things on this list.

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17. SOFT 968 CPC 464/664/6128 firmware guide
Curl up in bed for a good read. Thrill to the delights of KL DEL TICKER. Discover the inner meaning of MC BOOT PROGRAM and learn lots of phrases which sound good at the computer club. Seriously, an essential guide for machine code programming.

18. Trivial Pursuit £14.95
A board game you won't get bored with. Get the whole family around the computer at Christmas. There are 3,000 questions to answer, graphics and sound. It's harder to cheat at and costs less than the paper version.

Neat bits and bobs under £50

19. Cheetah Amdrum £34.95
A digital drum which can't be beaten. Plugged between your Arnold and an amplifier it'll deafen the neighbours – with a bit of programming you can sound like Phil Collins. With a radical haircut you can look like him too.

20. Amstrad SSA – 1 Speech synthesiser £29.95
Although the SSA-1 is obstensibly sold as a speech sythesiser it is really best used to get the most from stereo games. Once you have played Defend or Die with an SSA-1 hanging off the back you'll think that it's the only way to play.

21. Micropower rom board £34.95
Once you have used sideways roms you find it difficult to understand how you managed without them. The best romboard around hails from the frozen North. The box takes eight roms and connects with an edge connector.

22. Electric Studio light pen £29.95
Photography might be Latin for drawing with light but if you want to pen pixelwise then this is the cheap way to do it. There's a Joyce version but that costs £60 more.

23 Omni-Reader £49.99
The Omni-reader is pretty smart, it has a special "eye" which can read text and send it down a serial port as an Ascii string. You'll need an RS232 interface and it can only read selected typefaces.

24. Protext rom £39.95*
Once you've bought your rom board you're going to want something to stick into it. Protext is the best word processor to grace the Arnold, it's fast and friendly. Look out for ProSpell and ProMerge Plus.

25. Utopia rom £29.95*
Another Arnor add-on. This general rom offers disc formatting, automatic RUN"DISC and a graphics dump, plus loads of other things which seemed a good idea at the time.

26. & 27. Romatic Robot Multiface £34.95 or Mirage Imager £49.95.
There's not much to choose between these two – both take the contents of memory and dump it to disc. The Multiface doesn't work with as many programs but offers more and is certainly better value for money.

* *Not illustrated.*

Lash out up to £80

28. DK Tronics TV adapter £69.95
Turn your CTM640 or CTM644 into a tele. Monitor Dallas, play with programs and programmes. You could even use it to hook up alien computers. Just think – a colour TV in your bedroom for half price. Green screens look a bit, well um, green. (Fine for cricket).

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The more ram the better. Not only does it sound good when you are talking to friends, but it can be very useful. The 256K ram pack comes with bank switching software, some wonderful utilities and makes a CPC 464 hardware compatible for the CPC 6128.

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One drive good, two drives better. There are some jobs which really call for two drives, notably CP/M applications which need separate program and datum discs. If you've a 6128 don't forget to buy an extra disc lead.

32. Vidi digitizer £89.95
Have you got a video? You have? Good. The Rombo Vidi digitiser takes video input and turns it into a picture on your CPC. Digitize Dirty Den, program with Play School, get One Man and his Dog into ram. See the review in this issue.



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33. Volex teletext adapter £125
A must for the would-be financial wiz-kid. The Volex teletext adapter takes television signals and turns them into Ceefax and Oracle, news, sport and financial information. There are some Amstrad programs to download and a topical computing section.

34. Pace modem & Comstar £149.95
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A computer without a disc drive is like Christmas without presents. Some people think that a disc drive is like a turbo-charger, you don't miss it if you haven't got one. Anyone who has used discs wouldn't be without a drive.

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38. A new 6128 £399
Is your 464 getting old? Does your little brother hog the keyboard? Do you spend your time twiddling your thumbs waiting for games to load like the man in the



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41. A Rolls-Royce just like Alan Sugar for £85,000
(But Alan Sugar isn't a Rolls Royce). To have a car just like Alan Sugar you'd need the numberplate S 85 and a telephone. This is the ideal carrying case for a CPC 464 – as recommended by all millionaires.



Where to buy.

You can't always rely on Santa. Sometimes you have to actually spend money to get hold of the things you need. So where can you get your mits on these goodies? Turn to Page 91 and find out.

adverts? You do? Well a shiny new 6128 would soon fix that.

£1,000 is a round figure

39. Xerox 4020 Colour Printer £1,000 approx
For first class colour output you can't beat the Xerox 4020. Beautiful colours with over 4,000 shades. And with 240 dots per inch resolution it produces stunning results. For straight text it's a bit slow at 40 characters per second but it is very quiet.



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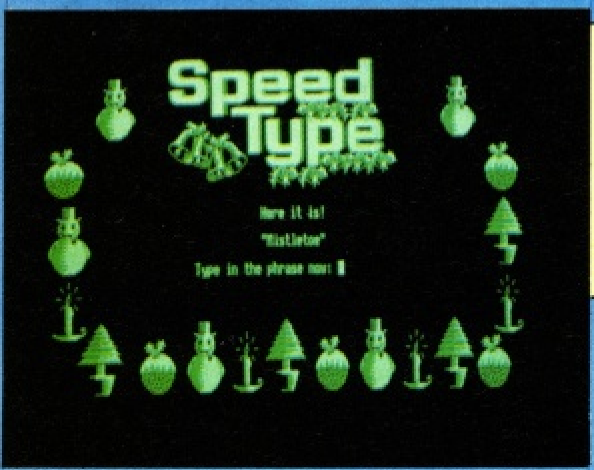
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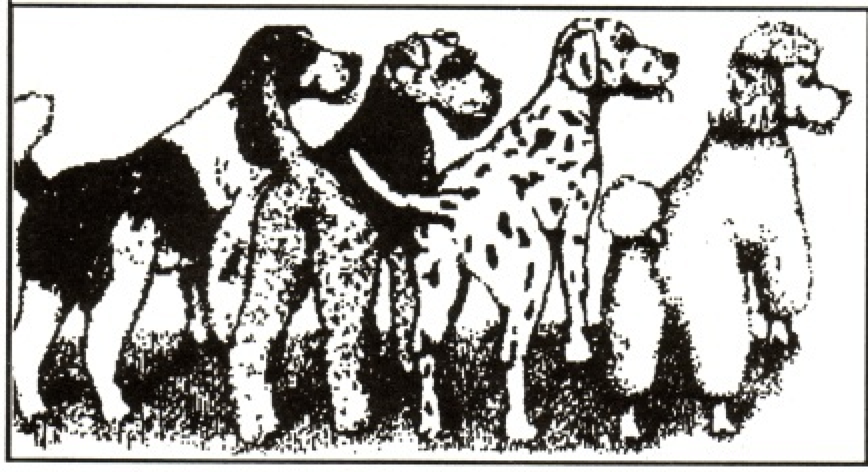
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ACU 12





The lucky 12

Results of our October Least Significant Bit contest

Little did we think that there would be so much interest in our competitionette run in October's LSB. Twelve free copies of Soft 968 to give away and all you had to do was give us a good reason why you should be the lucky recipient.

We were surprised how many people craved for knowledge of such esoteric mysteries as how to do bank switching and the jumpblock address for Fill.

Many and various were the methods employed to prise a "Bible" out of our hot little fingers. Bribery, threats, flattery, abuse, humour, drama and all this was from one little old lady in Surrey, the rest of you were much worse.

Some people are under the impression that the 968 firmware manual is a magic cure-all, capable of zapping bug-ridden programs into intelligible code. They will be sadly disappointed to discover the truth about 968. The moment you get one is when your troubles really begin.

The mystic spells and forgotten memory addresses unlock a world of demons and madness that only the sanest individuals can survive. Nine six eight is not an answer but a challenge.

Anyway, we have compiled the best of your reasons and printed them here. If you wrote and told us to send a Soft 968 so that you could beat your wife over the head with it, then read on, you may be immortalised in print and it might be you who gets beaten over the head.

If you haven't won the competition you may be glad to know where you can get hold of a manual. They should be available from Amsoft Mail Order. Their address is Victoria House, PO Box 10, Sunderland, Tyne and Wear.

Rhymes instead of reasons

Let's all try the rhyming couplet wheeze, as an easy way to enter, it's a real breeze. When pen was put to paper, some lines were short of punch, few made us laugh or not even half, but here is the best of the bunch . . .

Ode to Soft 968

At last it's here,
No need to fear,
Soft 968,
Should be worth the wait.

I don't want to moan,
But I was always on the phone,
Getting nowhere,
And loosing my hair.

But now I see that,
One could drop on my mat,
If you think my rhyme,
Was worth the time

This appalling p.. po.. poe... no I can't call it that, this appalling rhyme comes courtesy of John Holbrow of Dilton Marsh, Westbury, Wilts and just as soon as we can find some crinkly brown paper and string we'll be posting him one of our precious copies of the firmware manual.

Nutters

You'd have to be mad to want a firmware manual to read, especially when there are much more readable items in the world, such as Enid Blyton, a True Love photo story or an Omni-reader test sheet. Steven Herod of Sandiacre, Notts sent us a transcript of a conversation with his shrink. *(Can't spell psychiatrist eh? – Ed)*

"Well doc, it's like this – I've got this home computer". "Ah". "An Amstrad 6128." "I see, zis is very interestink". "Well you see none of the books I've read, looked at, or coloured pictures in, including the pop-up ones, explain it you see. I keep trying to write machine code to access the disc and it won't!" "Ah, zis is serious. Vot you vant is ze long quiet rest you know, viz ze good book to read". "And all these nonexistent RSTs, they're



driving me potty!" "Ah, you're an impetuous fellow". "And I hate this silly white jacket 'cos the sleeves are too long and they still won't give me a sharpener for my Batman crayons and . . ." "Nurse! Bring me ze new super sedative, ze von mit ze shiny black folder . . ."

If you think madness is a daft reason to get a firmware manual how about low intelligence? John Thompson of Linwood, Paisley has sent us his credentials. He writes:

As a member of DENSA at the age of 15 years 217 days, I think a firmware manual would provide me with the type of relaxing easy reading I enjoy. Not many people of my age have an IQ of four figures, even less have a negative sign preceding it. So, if you wouldn't mind, please relieve yourself of one Soft 968.



The Blues

There's nothing like a good sob story to soften the heart of a magazine editor and convince him to part with a manual. Here's the best of them:

You must have seen the Volkswagen advertisement on television about the fellow who had gambled and lost but could still rely on his trusty VW. It is the way I feel about my computer ownership.

I bought a 664 only two weeks before the 6128 was on sale. I bought a 256k memory from DK'tronics only to read the glowing reports on the Vortex 512k board. I actually ordered the mythical Soft 946 innocently thinking that if it was mentioned in my 664 manual that it would be available.

After many frustrating telephone calls I learned it did not exist and I was recommended to buy an "unofficial" book which only covers the 464. I still yearn for the firmware manual as there are many routines I want to explore further.

There is just one more reason I would like one of your complimentary copies of Soft 968; I need another book to prop under the right hand rear corner of my 664 to stop it tilting over when the DK memory pack is in place!

Must close now as my VW is double parked.

That was from Lionel P. Shrago of Kemnay Inverurie, Aberdeenshire. If you thought you had a good sob story Lionel how about this one from Tim O'Donoghue of Allesley Park, Coventry.

There now follows some of the very good reasons why I should be one of the lucky 12 to win a Soft 968: 1) Because I fell out of a 4th floor window. 2) I have been in Leeds General Infirmary for 10 weeks and would like something to read. 3) Because I live in Coventry and no one visits me in hospital "'Cos it's a 250 mile

round trip". 4) Because you should be crying after reading such a sob story (It's not that hilarious – Ed). *5) Because Mike Mordecai is cuddly. 6) Because I "Baggsied" one first. 7) Because I'm Alan Sugar's long lost brother. 8) Because I've got very sore feet. 9) Because a Soft 968 in my hand is worth two in the bush. 10) Because when I succeed in world domination I will give you America as a present (no not a bribe m'lud). 11) Because, because, because, because, because of the wonderful things he does. 12) Because I've given 12 good enough reasons to win all 12 Soft 968s but being such a kind soul I will let 11 other lucky readers have one each.*

Thank you very much for reading my letter this far and hopefully my Soft 968 should be waiting for me at home when I eventually get out of hospital. (Why, are you in for another 10 weeks? – Ed).

Another list of reasons was compiled by Bill Pointon, while skiving in the staffroom of Concept Man, Exeter, which he manages. He was very surprised to see our philanthropic offer and warned against a nervous breakdown while reading his entry.... So prepare yourselves:

1) Young (23) very good looking (Modest as well! – Ed). *2) Married. 3) House owner with huge mortgage* (ah). *4) Had to take in lodgers to survive. 5) I hate my lodgers. 6) They hate me and my 6128. 7) I'm exeedingly poor.* (Laying it on a bit thick – eh?) *8) I've looked for Soft 968 for six months.* (Who hasn't?) *9) I haven't got one.* (Who has?) *10) Stockroom manager of my shop is stupid. 11) Deputy manager is a manic depressive. 12) I've never won anything. 13) I belong to the home computer club. 14) I buy every Amstrad magazine. 15) I don't comprehend m/c but am willing to learn. 16) Soft 968 would look good next to my unused assembler. 17) I want to review it and earn some money.*

If you didn't think that lot was O.T.T he continues in similiar vien:

18) I've caught a disease off my cat and then it ran away. Soft 968 would cheer me up. 19) I'm in love with my wife's sister and want to impress her. (It'll take more than that.) *20) I'll give you a quid. (Is that all?)*

In desperation he tries his hand at poetry:

Oh, for a Soft 968
'cos I've heard it's really great
I've only got 55p
So please give me one free

Oh, how can you charge me
A fine upstanding pillar of society
For a Soft 968
Which I heard is really great

If you don't give me a 968
I'll get really irate
And then get all my mates (2)
To come and duff you up.



It doesn't even rhyme, but we had to give him one for persistence, and just to shut him up.

Mark Davies tried to impress us with bits of Gujarati and Punjabi written on toilet paper, or continuous stationery as he called it, reason being that he's writing a word processor for various Asian languages.

While I have managed to implement a lot of it using a borrowed CPC464 spec I have no idea where the 16k block switching calls are hiding or even exactly what they can do. I also need detailed information about the disc operating rom.

If you don't send a manual I will try to buy one any way. I could show you my UB40 but then if I was really hard up I could always sell the computer to get the money to buy the firmware spec. Hoping you think the project is worth supporting. (We do.)

UB40 also gets a mention from Allen Gillespie, in County Antrim, who describes himself as *"a long serving member of the Maggie's 4 Million club. As my local DHSS refuses to accept my 6128 as a dependent I think I deserve a Soft 968."* (Sounds like a good enough reason to me – Ed.)

To rival the little old lady who sits behind K.J Doel at night school is his reason for desperately needing a firmware manual.

While professing to just copy the rest of us, or what the tutor writes on the board, her sprites leap out of the screen like Nureyev with his tights on fire, while mine creep about like something going to a funeral.

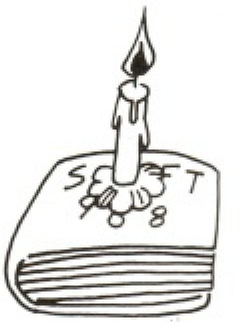


Keith Searing blames it all on his wife (the usual scapegoat).

I was forced to choose a CPC6128 because my wife didn't like the idea of me playing with Joyce's software, but she now appears keen to learn more about Arnold's firmware! Please don't bring out a hardware manual – she might not be able to restrain herself!

The most ingenious, but rather threatening, reason must be attributed to Gordon "smartass" Brown.

If you add 464, 664, 6128 and the number of the firmware manual, 968, together you get 8224. Convert this to hexadecimal (what?) *and you get 2020, which besides being the description of my vision and a television programme, is also the calibre of the Winchester (rifle,*



not drive) that you will be severely shot with if I don't get a copy of the manual by return! (Well we'll get the boys on to you – the Ed, shaking.)

Q. What do you buy the man who has everything?

A. Soft 968 of course, is Steve Gibbon's cocky reply.

P.S: If that's not a good enough reason it was my birthday on September 30! - Happy belated birthday. Enjoy your present from *ACU.*

Last but not least, in fact my favourite reason, not very imaginative, didn't take hours of thought, but short, sweet, and blatantly honest comes from Tony Riley:

The best reason to present me with a copy of the C firmware manual is because I bleedin' want one!!!

Well you're bleedin' going to get one.

ACU

Fast, useful – and fun

David Radisic combines three of his favourite things – a laservision player, Kate Bush and his CPC 6128.

While wandering round the Amstrad User Show I came across Rombo selling a Digitiser. "Wow!" I exclaimed, "just what I've always wanted". So after chatting to them for a few minutes I tried to obtain one for "review purposes".

Alas, they did not hand one over, even though I dropped Simon Rockman's name a few times during the conversation (could this have been the reason?). Desperate methods were needed here, so the only thing that could be done was to buy one – and me a life long scrounger.

Handing over my cheque for the best part of £90 I was given a small brown box with a sticker saying VIDI Interface and a disc containing the relevant software for my CPC 6128. The software is available on rom, but since the Vidi interface doesn't include a socket I settled for the disc based program.

Software and documentation

The Vidi manual is a short introductory "preliminary" set of photocopies – not the finished manual – and does not contain the complete instructions. This is not too much of a limitation since once the Vidi is plugged in and the software is running frame grabbing can begin by typing:

|VIDEO

The connection to the Vidi is through a standard phono connector and requires any composite video signal, such as that from a VCR or Video camera. When grabbing frames the best result is achieved from a static screen image. Unfortunately most VCRs in pause mode generate an erratic sync signal, which means the Vidi may have problems finding a frame and a bit of careful tweaking is needed to get things going.

You can only grab a perfectly still image in mode 0, so this is effectively restricted to use with a video camera and tripod, or a video disc player.

Computer control

|VIDEO allows frames to be grabbed continuously, even from live TV (through a VCR), while you can select and change various settings such as brightness and contrast. This will no doubt be the most used feature of the Vidi, as everything is available through a small menu.

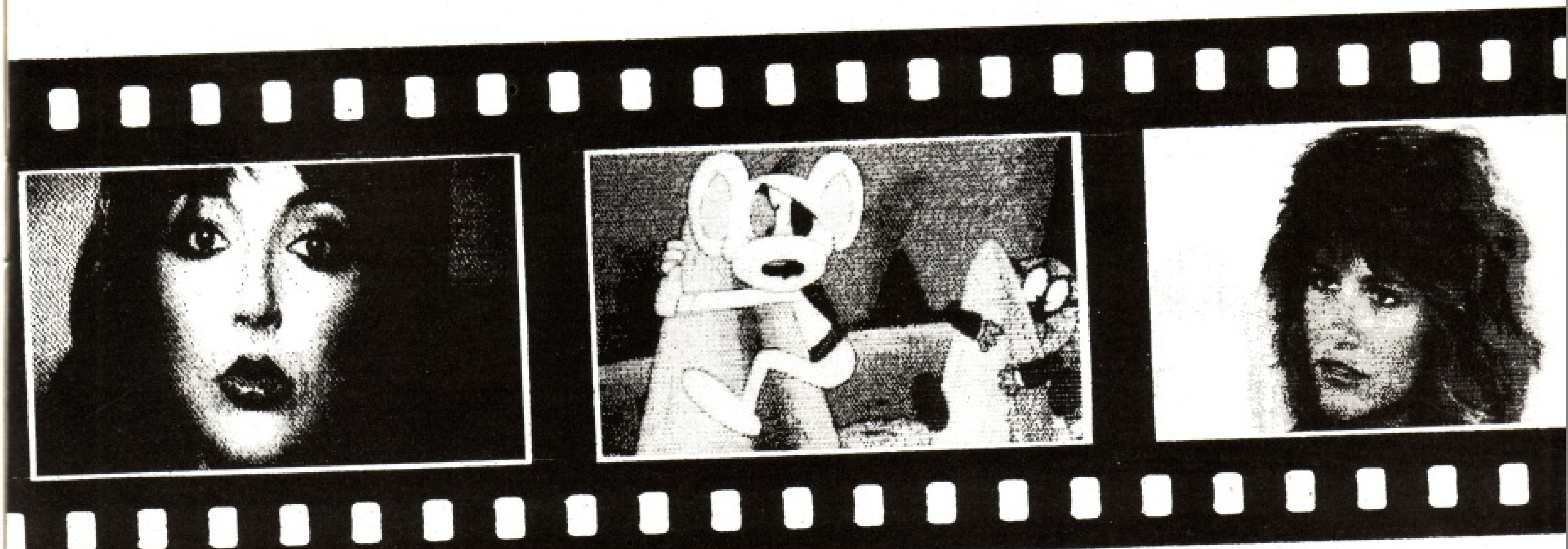
In the |VIDEO mode about 3-5 frames a second are grabbed and displayed in either mode 1 (four shades/colours) or mode 2 (two shades/colours). A mode 0 (16 shades/colours) option exists which is actually displayed in Mode 1 while frame grabbing but saving or printing in Mode 0 is rather more involved.

While in the |VIDEO routine the bottom line of the screen shows a small menu containing eight selections. A cursor highlights one of these and can be moved left or right through each of them. The selections do actually exist as RSXs as well and so could be used within a Basic or machine code program of your own design.

Menu selections include CON – contrast level from 0 to 15 and the RSX command, |VCON. BRI controls the brightness level, which can be anywhere from 0 to 15: |VBRI is the RSX equivalent.

The screen can only display 200 of 312 video lines at a time. To compensate for this a vertical adjust command allows you to select the part of the video image you want displayed and can be adjusted between 0 and 127.

0 displays the top section of the image



and 127 displays the bottom. The default is set to 64, but after some experimenting I found a setting of 30 to be best for most of the action from TV. The RSX equivalent is |VPOS.

The menu offers any of three modes for frame grabbing. The modes are, of course, exactly the same as the mode command in Basic.

Mode 2, being only two shades, gives high resolution (640 by 200) but for most purposes does not produce very satisfactory results. It is best used for designing silhouette pictures, which can be quite pleasing. The RSX equivalent of the mode selection is |VMODE.

Following the mode option comes the ink settings. This is exactly the same as the INK command in Basic – selecting an ink will show the current colour setting. This can then be modified to any of the 27 colours/shades supported by the CPC to suit the video picture being displayed.

In a Mode 1 frame the intensity levels are not as expected, being in the order 0..1..3..2 rather than 0..1..2..3. If this causes any problems when using the pictures in your own programs there is an |RSX called |VCONVERT which swaps pens 2 and 3 so that everything is back to normal.

Save screen and print screen options complete the menu selections, saving mode 1 and 2 screens just as they appear during frame grabbing. When save is selected the menu line at the bottom of the screen will be replaced with a filename prompt.

The default filename is VSCREEN0. If the filename ends in a number it will be incremented on subsequent saves so a new filename doesn't have to be typed in each time. This saved file is a screen image binary file and can be loaded very easily, for example by first setting the mode and then executing a LOAD" VSCREEN0",&C000.

When saving a Mode 0 screen image the screen is changed from it's mode 1 display to 0. The Vidi software will then grab 16 frames, one at a time, in each of the brightness levels (0 to 15). Each frame is overlayed with the previous ones to build up the final image. This can take from about ten to fifteen seconds, the end result being a high quality picture in 16 shades/colours.

Altered images

Once you've captured your picture of Ronald Reagan the fun begins. A way of editing your finished images with Screen Designer would be to create a dummy Screen Designer file with the same name as your video image file.

This produces two files with type parts .SDS and .SCN. The .SCN file can then be deleted. If you then rename your video image file from a .BIN to a .SCN file and go into screen designer the image can be loaded and edited.

Printing a digitised image is done in one of three ways, depending on which mode is set. Mode 2 is printed horizontally on the paper in two tones. This picture is slightly smaller than a green screen monitor display.

Mode 1 prints out exactly the same size of picture as Mode 2 but using four shades. Mode 0 is printed vertically on the paper and is about the same size as a colour monitor display. This printout, of course, uses 16 shades.

The quality of the printout is very good, especially for Mode 0 frames, and results are best viewed from a distance of about five feet. Having the |VPRINT built into a rom is very handy as it works with any type of screen image, although it can only use the preset shades.

There are two other RSXs included: |VGRAB which grabs one frame and displays it in the current mode and |VRESET, which resets the menu selection settings to their default values.

More powerful frame grabbing applications could be written by using the built in RSXs. Rombo Productions has some ideas and will issue updates to its software/roms as new versions become available. Rombo is looking for any ideas, programs or images that anyone comes up with, for future projects.

Conclusion

Of the few digitisers – for any micro – that I have seen, I would say that the Rombo Vidi compares very well and has a very bright future. I look forward to the next version of the software – let's hope it includes a colour frame grabber or an animation system which uses digitised images for Max Headroom style films.

The verdict? A very good, fast, cheap and useful interface which will go a long way and give a lot of people a lot of fun for a some time. If there are enough of us using these things in the future the magazine may well decide to hold a competition for the best digitised image, or best animation sequences.

If I hadn't done so already I'd buy one.

Product: Video Digitiser
Supplier: Rombo Productions, 62 Meadowbank, Ladywell, Livingston, West Lothian, EH54 6EL
Tel: 0506 39046
Price: £89.95

ACU



256K SILICON DISC



This is the fastest storage system available for Amstrad CPC computers and is compatible with CPM 2.2, CPM+ and all DK'Tronics peripherals including the 64K/256K memory expansions. When used with CPM+ and our 256K memory the edition disc capacity is a massive 442K (more than the PCW 8512 Ram Disc). It automatically logs on as drive B or drive C in two drive systems and does not require extra power supply.

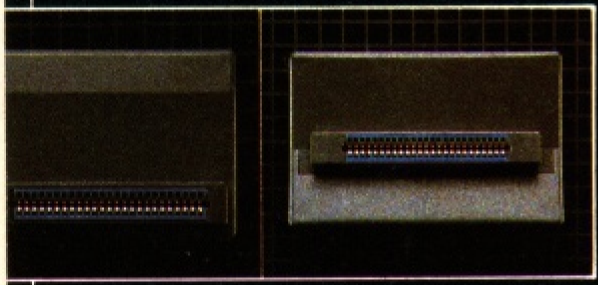
The 256K Silicon Disc is designed to be used with at least one normal disc drive attached. When fitted the directory uses 2K thus leaving 254K for storage, over 70K more than the normal discs.

Data and programs can be exchanged between the Silicon Disc and a normal disc, application programs can then work on the data at vastly increased speed especially on systems with only one normal drive.

Software is contained in an expansion ROM and there are two environments in which the Silicon Disc can be used, BASIC under AMSDOS where all the normal AMSDOS commands are fully supported LOAD, SAVE, MERGE, CAT etc and within CP/M 2.2 CP/M+ where commercial programs are designed to run on multi drive systems.

£99.95 including VAT (464 and 6128)

64K and 256K MEMORY EXPANSIONS



The memory expansions increase the Amstrad 464's internal memory to give a total of 128K or 320K. The 621's memory is increased to 320K. It is compatible with all DK'Tronics peripherals including the 256K Silicon Disc.

It is supplied with bank switching RSX software (464 software on cassette 6128 on disc.

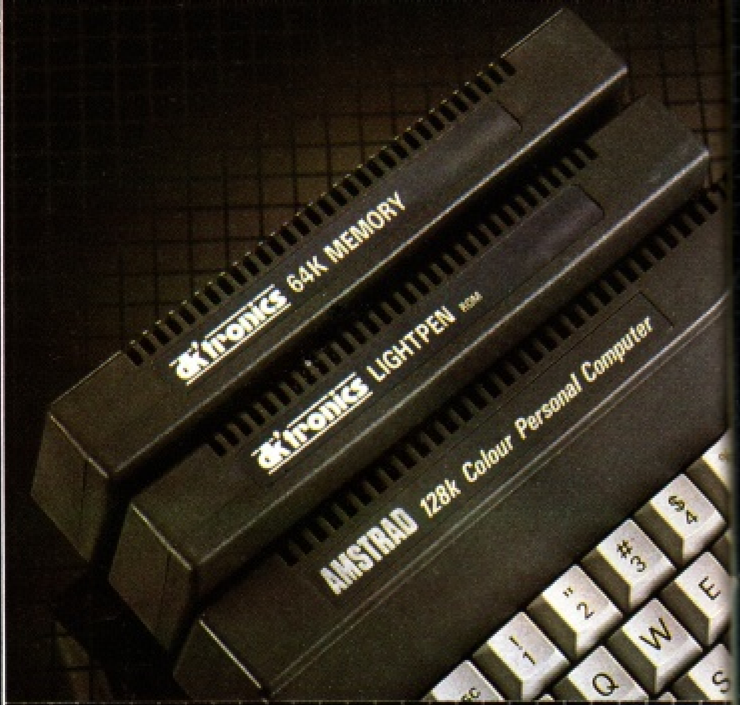
The software adds some BASIC commands which makes it possible to use the second 64K (or 3rd or 4th and 5th in the case of 256K) for storage of screens, windows, graphics and basic arrays. This ability means that you can write much larger basic programs and sophisticated programs that use pull-down menus with ease.

With an expansion fitted on the 464 it then has the same memory configuration as the CPC 6128. It will then run CPM+ with its massive 61K T.P.A. area, opening up an even larger software base to 464 users. When using either of the expansions with CPM 2.2 on the 464 and 6128 computer the T.P.A. is increased to 61K.

The RAM is accessed by means of bank switching using a single I/O port. Memory is actually switched in and out of the 64KZ80 address space in 16K sub blocks (as are the ROMS). The port determines which particular combinations of the original four 16K sub blocks and any new sub blocks from the expansion RAM will occupy the 64K address space at any time. All of this switching is done automatically by the software supplied.

The contents of the expansion RAM are retained if the computer is reset and if the RAM is used for machine code the contents will remain even if the computer crashes.

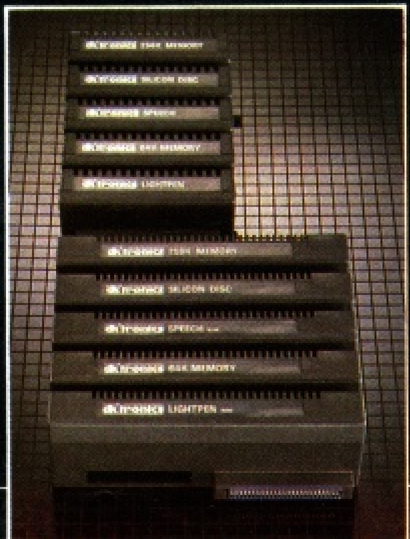
64K **£49.95** including VAT (464 only)
256K **£99.95** including VAT (464 and 6128)

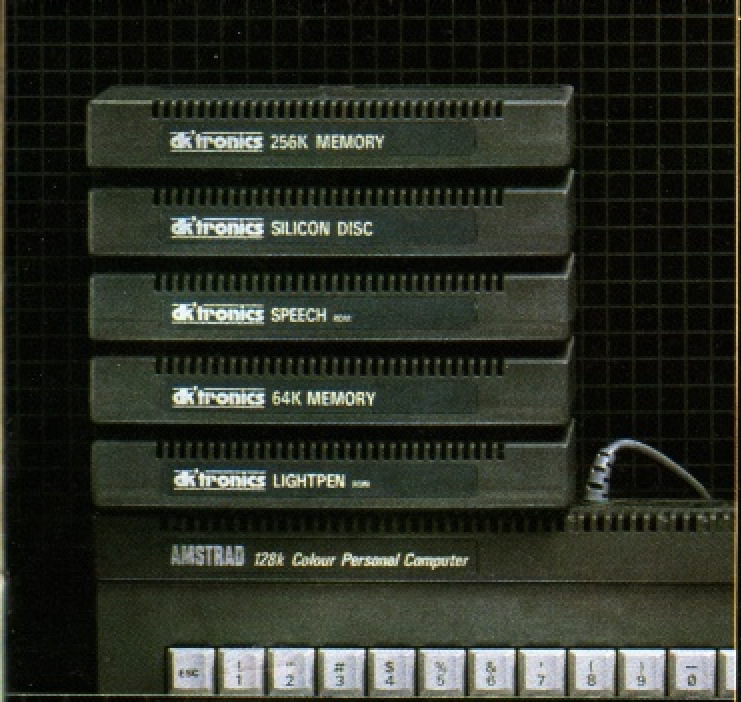




L/E/A/D FROM B

DK'Tronics have produced this ra
enlarge the potential of the 464
and have been designed to com





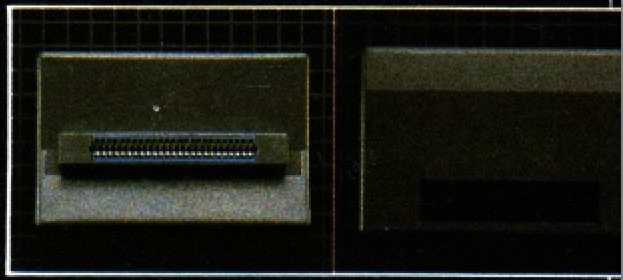


D I N G

BEHIND

is range of powerful peripherals to 464 and 6128 Amstrad Computers compliment their style and colour.

GRAPHICS LIGHT PEN



The sophisticated graphics package includes a colour palette, nudge control for one pixel accuracy, brush choice, text handling and user defined characters.

It can magnify, shrink, colour fill and create circles, rectangles, lines and curves.

Complex pctures can be easily edited at pixel level using a scratch pad which is magnified to the full screen.

There is picture storage and retrieval, and a pen calibration utility and there is also an Amstrad/Epson compatible printer dump utility supplied on cassette.

There is a cassette version for the 464 and a ROM version for the 464 and 6128.

Cassette **£19.95** including VAT (464 only)
ROM **£29.95** including VAT (464 and 6128)

SPEECH SYNTHESISER



This simple to use speech synthesiser includes a powerful stereo amplifier and two high quality speakers which greatly improves the sound quality of the internal mono speaker.

It uses the popular SPO/256 speech chip and has an almost infinite vocabulary.

It is supplied with a text to speech converter software for ease of speech output creation. Everything you wish to be spoken is entered in normal english without special control codes or characters making it extremely easy to use.

The voicing of the words is completely user transparent and the computer can carry on its normal running of a program whilst the chip is talking. The speech output from the SPO/256 is mono and directed to both speakers.

There is a cassette version for the 464 and a ROM version for both the 464 and 6128.

Cassette **£29.95** including VAT (464 only)
ROM **£39.95** including VAT (464 and 6128)

HOW TO ORDER

DK'Tronics products are available in all good computer stores but may be obtained by completing the order form below and returning it to DK'Tronics or by telephoning and quoting your Barclaycard or Access number.

Orders are normally despatched within 24 hours and if you have any further queries concerning our products do not hesitate to give us a ring or send us a large stamped addressed envelope for our latest free 84 page technical manual covering our Amstrad product range.

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DK'Tronics Limited
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The definitive adventure for the CPC?

John Baker gets to the heart of Heartland

• Make a map – otherwise you'll never complete the quest within your time limit.

Attics are strange places. Dark and musty, close inspection reveals all sorts of long forgotten junk; cots, old train sets, chamber pots, ZX 80s, boxes of papers and books that haven't been touched since the year dot. Sounds familiar?

Now imagine youself reading one of those books, only to find yourself inexorably drawn into its world of mystery and magic – all the stuff of classic fantasy, and the main plot line behind Odin's latest offering for the Amstrad CPC, Heartland.

Odin Computer Graphics, to give the company its full title, consists of eight programmers, four artists and one musician – the kind of mix that is becoming so common among the leading software development teams.

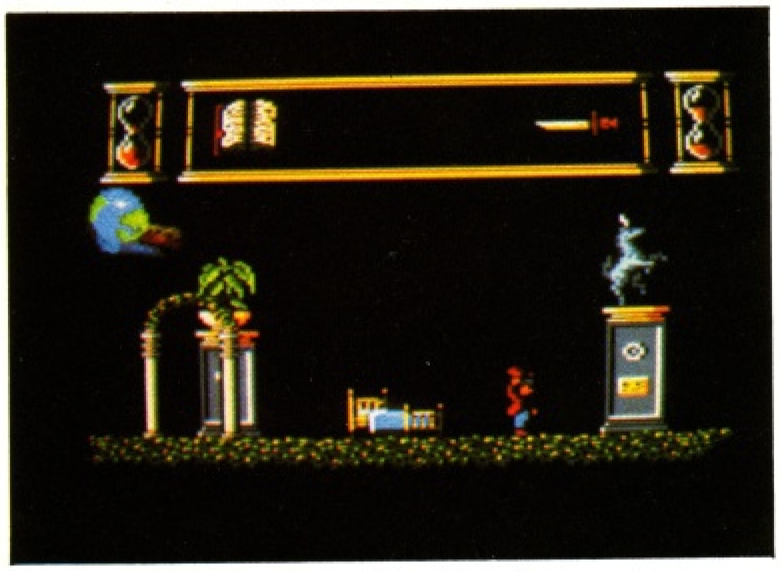
This blend of programming skill and artistic flair has undoubtedly reached its current peak on the CPC with this title, a conversion from their existing Spectrum game.

Now the Arnold gets its fair share of conversion jobs – some good, some not as good as the "originals". But believe me, Heartland is one of the first games, to my mind that is significantly superior to its predecessor *(Sorcery? – Ed).*

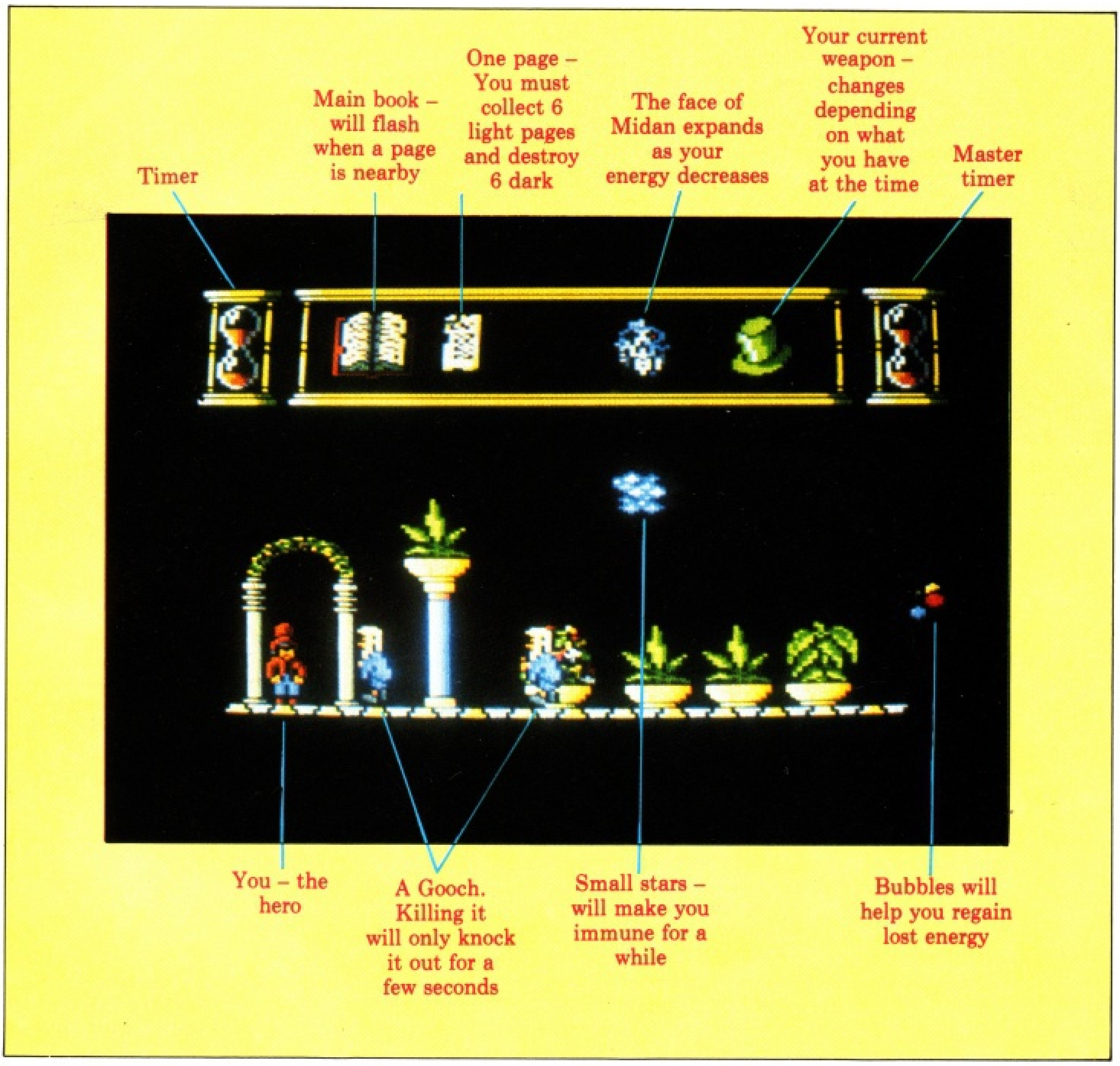
Heartland on the Spectrum was good enough – some of the Speccy mags went ga-ga over it – but I felt, on that format, the graphics just weren't detailed enough to invoke that feeling of the unreal that the game promised.

Evidently Odin must have thought that too, as for the CPC every single graphic has been re-designed and re-drawn in glorious 16 colours (that makes 128k of graphics data alone!) and the scrolling and animation is some of the smoothest you'll ever set your eyes on. The sound effects aren't half bad either.

Combine this lot with an enchanting plot, fiendish gamesplay and a strict time limit and you end up with the definitive arcade adventure for the CPCs to date.



The beginning: The bed and the book in the garden



The game has you taking the part of the Wizard Eldrich (looking strangely like a certain Mad Hatter) who must travel around the various levels of Heartland (there are five in all, The Garden, The Moonbase, The Caves, The Castle and The Village) to locate the Book of Heartland.

Then you must collect the six "light" pages that comprise the last chapter of the tome, while destroying the six dark pages created by the Evil Arch Enemy, Midan.

This is made slightly more difficult by the fact that Midan has detected your presence in Heartland, so is doing his best to wipe you out with his minions and spells – and weakening the magic of the book itself, thereby limiting the time you have availible in each land. It's tricky!

Gameplay

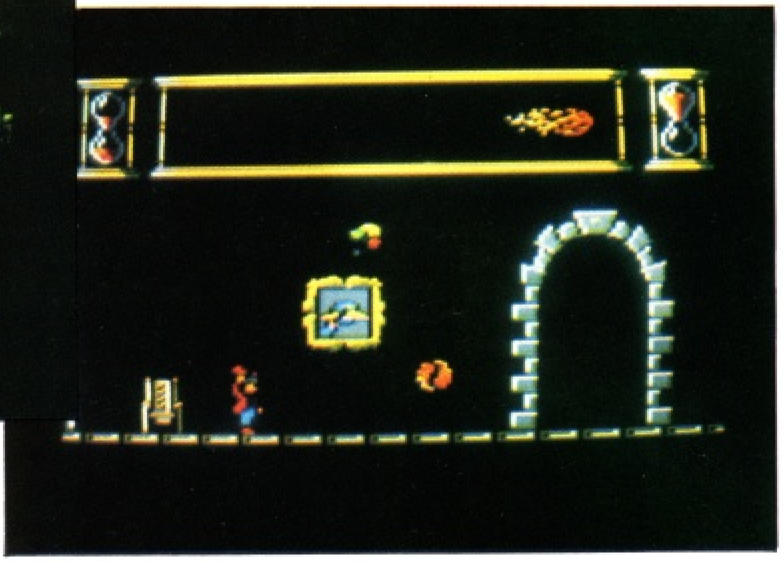
Control of Eldrich is via joystick: Simple left/right, up for jump and fire to zap

● *Take care when jumping across gaps – one slip is fatal!*

● *Grab fireballs whenever possible – they're lethal!*



Caves – hats off!



Inside the castle

● Try to zap evil spells as soon as they come on-screen – they're bad news.

● Watch out for Wizards – they're like mobile flame throwers.

● If there's a page floating about, don't shoot – zapping it will mean you can't finish the game!

with whatever you're packing at the time.

Weapons can be gained by catching them as they float about on-screen. There are three types: Top Hats will blow the opposition away with three hits; Swords require only two; while Fireballs, awesome things of destruction, only use one hit to get rid of the foe.

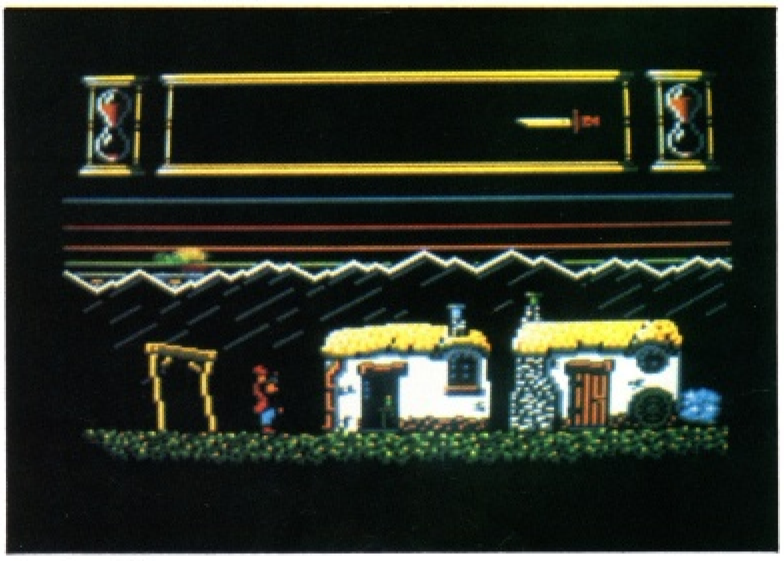
However, Swords and Fireballs are used up quite quickly, whereas Top Hats last indefinitely. The graphic display on the top of the screen shows your current weapon.

The first thing you must do – you start off by your bed in The Garden – is to find the Book, but don't worry, as Odin make this fairly easy. You just catch it as it floats by. The book is the most important piece of your equipment, as it will flash in a location where a page is present.

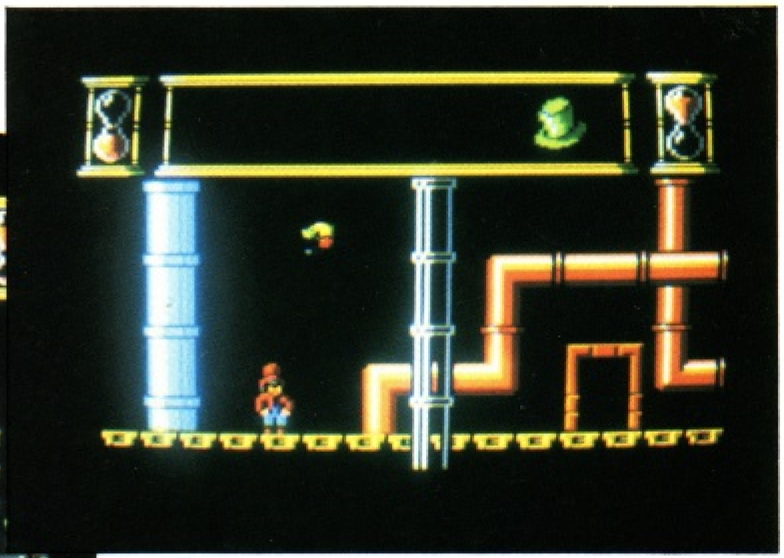
There are about 40 locations to a level with two pages on each.As soon as you have collected two the book will flash again, and you must make your way back to the bed. Now the next level will automatically load. Of course, it's not that easy.

Enemies

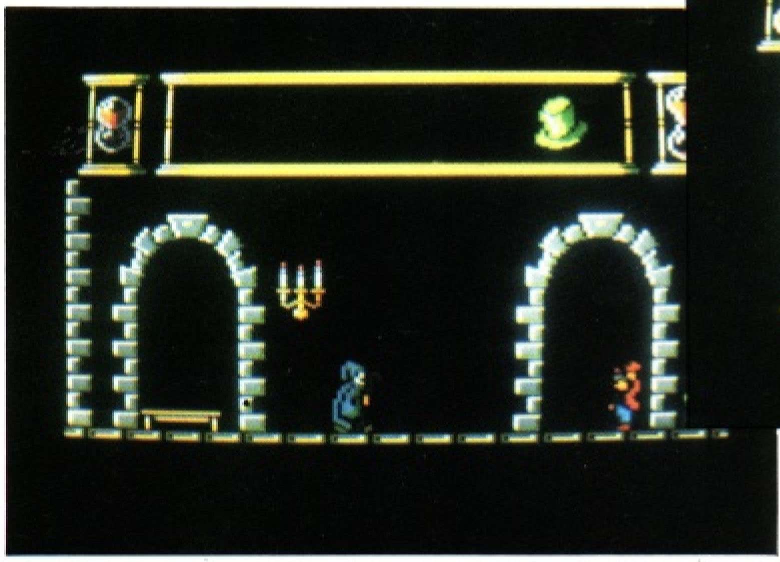
Each level has one charactaristic type of enemy – Wizards on the Castle level for



In the village



Moonbase level



Watch out for wizards!

instance (watch out, they spit fire), Spacemen on The Moonbase, Woodmen in The Village (see those axes fly), Gooches in The Garden.

Colliding with any of these (or being hit by them) will increase the power Midan has over you – it's indicated by the opening and closing "iris" of his ugly mug above the main display. When fully revealed you're dead!

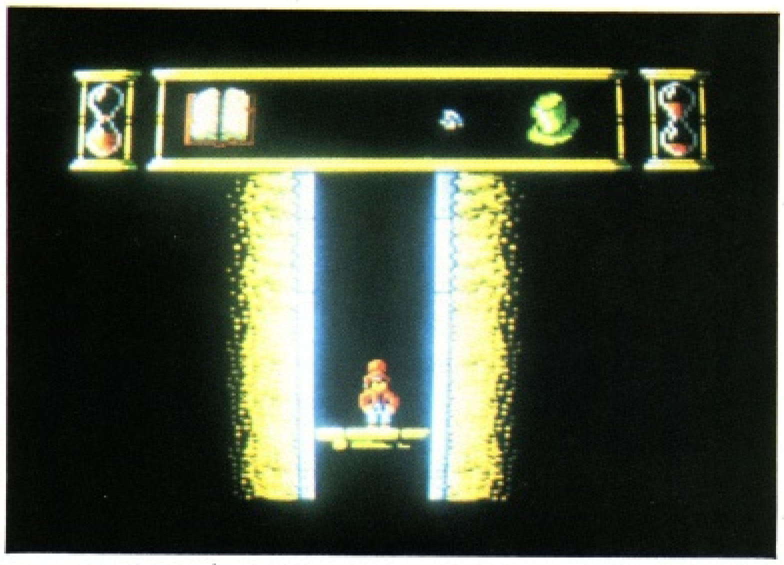
Energy can be regained by catching refreshing bubbles, while temporary immunity is won by colliding with silver sparkles. On the other hand, if you find yourself pursued by a cluster of large stars (and I don't mean the Nolan Sisters) shoot them fast (maybe I do mean the Nolan Sisters) as they'll sap your strength fast if you let them.

Overall

Each screen of each level is beautifully designed – you just can't fail to be impressed – but Heartland isn't just about graphics. Smooth animation, excellent sound, and highly developed gamesplay make this the slickest, most entertaining Amstrad arcade adventure to date.

If you enjoy games of this type it's a must for the Christmas list. If you don't, try it – Heartland may well charm you into thinking otherwise.

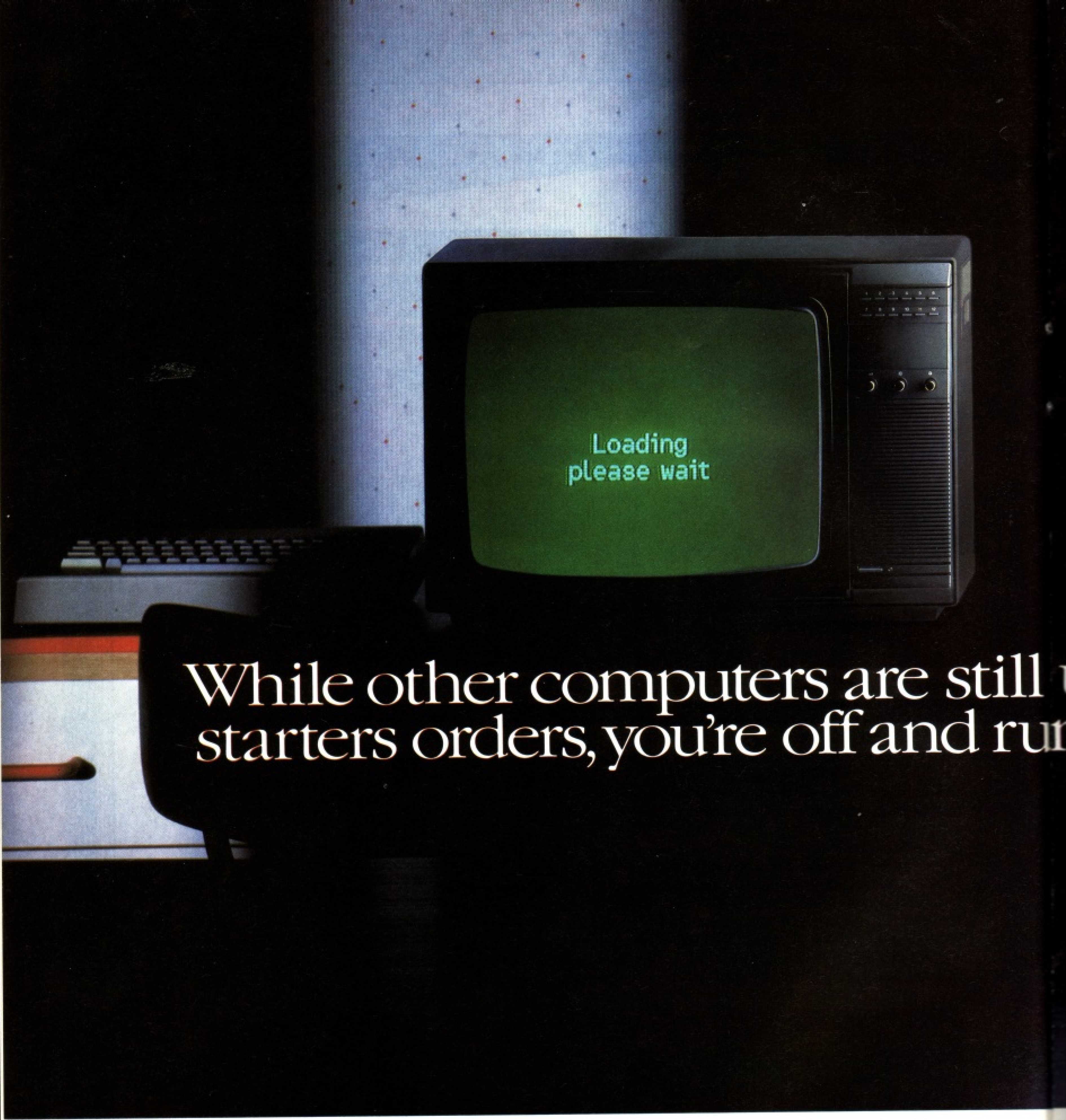
● *Hang a "Do not Disturb" sign on the door – the lack of save or pause facilities (naughty, naughty Odin) means you can't leave the keyboard for a moment.*



The lift – going up



ACU



The Amstrad 6128 has a built-in advantage over most other home computers.

Its fast loading disc drive unit.

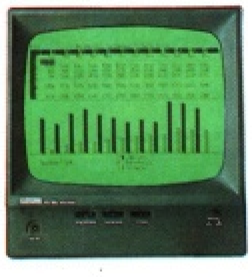
An ordinary cassette driven computer can take as long as 15 minutes to load.

Whereas the 6128's built-in disc drive will load the same programme in seconds.

Which means you don't waste valuable playing time loading.

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GALLUP SOFTWARE CHART

Position	Title / Publisher	Comment	Last month	Market strength
1	**Thrust** *Firebird*	Not surprisingly Number 1 for the second month. Simple and clever space game. A cross between Asteroids and Lunar Lander.	1	100
2	**Speed King** *Mastertronic*	Good value, fast moving racey motorcycle game.	2	94
3	**Apprentice** *Mastertronic*	Sorcery on a budget. Enjoy waving spells and conjuring up magic.	ne	73
4	**Kane** *Mastertronic*	Excellently animated, budget priced Wild West shoot out.	4	62
5	**Ninja Master** *Firebird*	Lots of kicks in this four part test of Japanese fighting skills.	3	51
6	**Trivial Pursuit** *Domark*	Quirky questions and polished presentation give you as many endless hours of fun as the board game.	ne	47
7	**Conquest** *Mastertronic*	A conversion of a Derek Brewster story. A must for all adventure game enthusiasts.	ne	41
8	**5 A Side Soccer** *Mastertronic*	Lead your team to victory in this all action sports simulation.	ne	38
9	**Harvey Headbanger** *Firebird*	Jolly arcade game which demands quick wits and fast responses. Best for two-players.	5	38
10	**Starstrike 2** *Realtime*	Excellent 3D inter galactic battles. Very clever, action packed, highly addictive.	ne	34
11	**Ghosts and Goblins** *Elite*	Faithful conversion of the coin-op original. Difficult but addictive. Great fun once mastered.	6	30
12	**Jack the Nipper** *Gremlin*	Have fun being as naughty as possible. Great graphics and wicked sense of humour.	14	30
13	**Dan Dare** *Virgin*	Their best game is based on the comic strip. Stylish, thrilling adventure to save Earth from Mekon's Asteroid.	ne	28
14	**Green Beret** *Imagine*	Play macho man. Take on a whole army single handed with only a knife and the occasional flame thrower.	8	28
15	**Elite** *Firebird*	The famous space trading game with plenty of mid-flight action. Highly addictive and an essential purchase.	12	27
16	**Bomb Scare** *Firebird*	3D game in the alien 8 mould. Bit of a bore unless your a die hard cartographer.	ne	25
17	**Video Poker** *Mastertronic*	Computerised card games tend to be naff. Stick to the real thing.	ne	25
18	**Storm** *Mastertronic*	Gauntlet-style view from above arcade game. Very addictive with a huge map.	7	24
19	**Tomahawk** *Digital Integration*	Fun helicopter flight simulation. Plenty of things to shoot with strategy if you want it.	re	23
20	**Knight Games** *English*	Enjoy fighting in armour in true Middle Ages style.	9	22

Non-mover | Up | Down | New entry

DECEMBER 1986

Chart compiled by Gallup/MicroScope



Don't argue with Rod Cousins

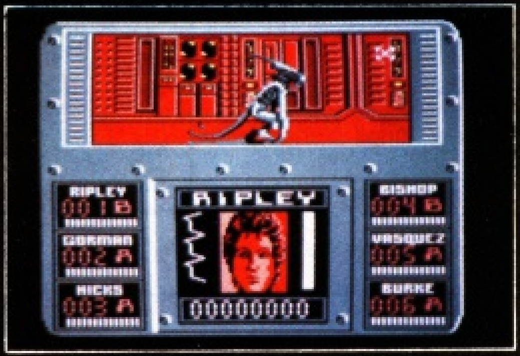
ALIENS

Let's hope you've either seen Aliens, don't want to see it or are too young to get into the cinema because this is about to ruin the start of the film.

At the end of Alien, Ripley, played by Sigorney Weaver is left floating through space in an escape capsule after an alien picked up on an otherwise uninhabited planet had devoured the rest of the crew.

She goes into suspended animation (deep sleep) and drifts for decades until the capsule is picked up by a salvage team. On awakening she learns the planet has been inhabited and but that all contact has been lost with the colonists. A SWAT squad is sent in to destroy the aliens, with Ripley acting as adviser on the mission.

In the game you control the six members of the squad, including Ripley, Bishop the android (who prefers to be known as an artificial man – with white blood) and Burke, the man who has been sent on behalf of the company. He wants to safeguard the company's interests since it owns the recycling plant on the ill fated planet.



Ripley's in trouble – you can save her

The foe

The six members of your team must seek out and destroy the aliens to prevent them from taking over the base. There are four types of foe. Alien warriors, face huggers (yeech!), alien queens and eggs. A slight deviation from the film allows there to be more than one alien queen – otherwise shooting her would end the game far too quickly.

Your mission

In the film the squad enters the alien base in a Captain Scarlet style tank. The lucky guy who gets to stay inside the tank can watch what is going on with a control panel. It is this which is mimicked by the game.

You view the action through the eyes of Ripley, Gorman, Hicks, Bishop, Vasquez and Burke. You can monitor ammunition and room number for each person, your overall score and status – fit, ill or under attack.

The game allows you to control each of the individuals, move from room to room and fire the smart guns. Beware of being trigger happy. One shot is enough to draw a nearby alien to you. To kill an alien requires one shot to the head or three to the body – and you need to be fast. After the first body blow the alien is on you like a ton of slime.

You know if you are not alone – the proximity meter sounds to warn of approaching creatures, friend or foe. As your character turns the view scrolls in a kind of Battlezoney way. It is the sense of not knowing who, or what, is behind you that makes Aliens scary.

In between attack waves blast shutters close to show your score and the number of aliens, face huggers and eggs which have been blasted, shot or fried.

You can have some characters obeying orders while you take control of another. So you can get Burke to move forward nine rooms while you take Ripley through another area a room at a time – the game comes with a map of 255 rooms showing the shape of the base.

You can use your gun to jam doors open or shut, but having seen the film makes me doubt the merits of the latter course. It is useful if you are being chased but you need to be quick – if you shoot an alien in front of a door then you can't get past as it bleeds acid which blocks your path.

Special rooms

There are some special rooms. There is a medical block and the queens' chambers at the end of a maze and you need to get to the armoury to obtain rounds for your smart gun. And the central control room contains the generator – if the aliens take that over you lose all the lights and have to work within a torch beam.

To stop the rooms from being taken over you need to shoot the bio-mechanical stuff which oozes over the walls. This is quite fun but beware of shooting when there are aliens about.

Playing the game

The game has been programmed by SoftMachine: The Amstrad graphics were ported from the Commodore 64 and look excellent. We only saw a



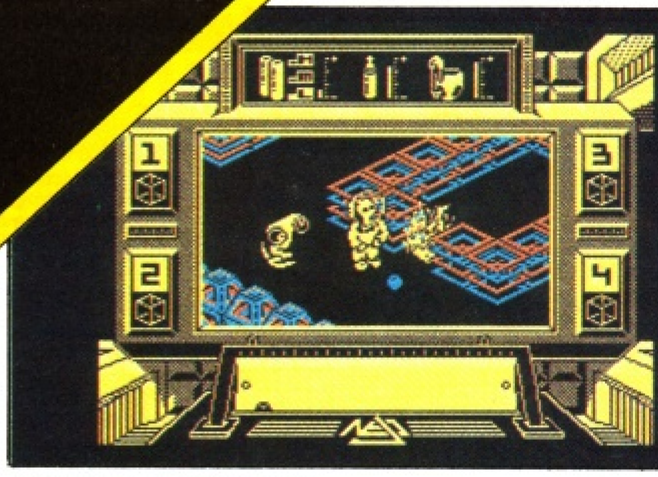
Mev Dinc showing how to play Prodigy



A warrior stalks the base

pre-release version and the scrolling was a bit jerky, but the animation of the aliens was superb. When you know there is an alien about and you can't see it you tremble, if you find the creature as it homes in for the kill you jump.

Film tie-ins are often used as an excuse for a poor game. With Aliens this is not the case, it is an excellent program – just don't play it in the dark.



A scene from Prodigy

More than just Aliens

Though owned by Activision, an American giant based in L.A., software house Electric Dreams does not live in big brother's shadow. It has a lot going on with several projects nearing completion.

The two companies are kept very separate, with Electric Dreams based in Southampton and Activison in London. The former has established its independence over the last year, after a time when it looked like being another Activison label.

The two now have different flavours, Electric Dreams being more arcade oriented and Activison concentrating on programs like Hacker which have a strategy element.

Both have well known titles in their stables – Howard the Duck and Labyrinth are two films to which Activison has the rights while Electric Dreams has Aliens, Big Trouble in little China and its greatest hit, Spindizzy.

Working with Activision has given Electric Dreams much greater buying power and a route into the difficult American market. This has been so successful that the American Electric Dreams label has been used by other British software houses to sell games like Transformers.

There are some great things planned too . . .

Hijack

You are a troubleshooter, head of a security division in the Pentagon, with a hijack to resolve and hostages' lives resting on your decisions.

You're not alone: you have people who will help you – and the president keeping an eye on you.

The program is a 2D spritey game, a little like Mission Elevator. You start in your office and as you walk around, a window on the screen shows what you can pick up.

You move through the building using lifts, look through filing cabinets or even empty the bin. In your searches you will find the codes needed to open doors later in the game.

There are three ways to solve the problem – financial political or military – and a cast of thousands: Military and polictical advisers, assistants, financial and publicity officers, a secretary and of course Mr President himself.

He can authorise finance but it is easy to upset him – to placate him, get the publicity officer to send out press releases. The CIA and FBI can be called into play when the need arises.

To resolve the hijack you will need to pool resources and investigate avenues. Manipulate your employees and finally save the hostages. Good luck.

Prodigy

This is a non-violent game, written by Mev Dinc. You have to escape from a huge lab complex and protect your baby, Nejo.

The lab consists of four zones, Veggie, Ice, Fire and Tech. You need to maintain your oxygen level by entering the ice zone and popping balloons in the correct order. Solving puzzles, dodging monsters and stealing the security cameras helps you to escape.

A system of teleports moves you from zone to zone, so despite the distance involved you can flip back to get more oxygen when you need it.

Tools within the game include a bucket of water which can be used twice to put out fires before you need to re-fill it. Refilling is done in the shower, which is also used to clean the baby.

A major obstacle is a moving maze which stubbornly refuses to slide in the way you want unless you turn your back on the tiles.

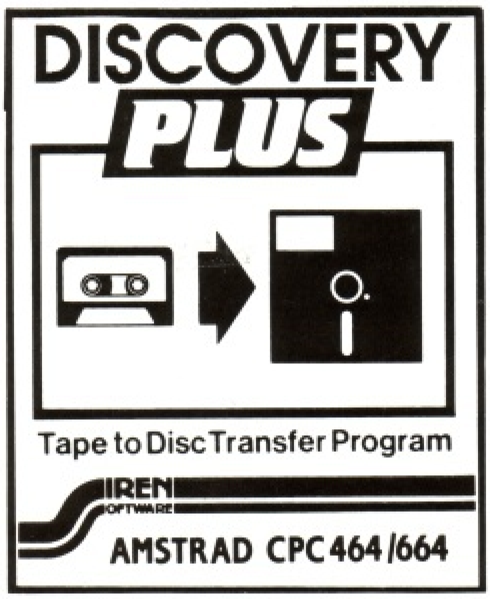
A novel feature is that action carries on even when it is off the screen, such as the baby continuing to do baby-like things.

Completing the game – even if you are really good – will take two or three hours.

Electric Dreams

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Joyce gets a dictionary

LocoScript can now spell. Rupert Goodwins looks at the pros and cons of LocoSpell.



For the vast army of Joyce users who have remained faithful to LocoScript and shunned the siren song of CP/M and Wordstar the announcement of LocoSpell – LocoScript with added spelling checking – should be welcome indeed.

Given the level of professional use made of the PCW series, it's perhaps not surprising that LocoSpell has been much asked after at shows, in bars and wherever two or more LocoScripters have been gathered together. Here it is, but does it work?

LocoSpell looks almost exactly like LocoScript, with all your favourite facilities left untouched, but with the addition of various options. These are available at any time during the editing of a document, and ask the computer to check all or part of the document against the current dictionary.

LocoSpell comes with two dictionaries, a standard one of some 32,000 words, and an extended version with 77,000. Both are supplied by Longmans, who are well known for their specialist wordbroking.

You can also compile your own personal dictionaries to use in addition to the supplied ones, and Locomotive are talking about providing some for specialist applications, such as the legal or medical professions.

Installation

LocoSpell is started up in familiar fashion by restarting the Joyce with the disc in drive A. Halfway through the procedure, however, it announces that it's LocoScript (with LocoSpell), Copying A:LOCOSPEL.DCT.

This is the dictionary being moved to drive M, the ram disc. Using this method, the checker can run much faster than if it was using the dictionary on an ordinary disc to check against.

Then the much loved disc management screen appears. Apart from the file in Drive M, it looks and acts precisely as the unreconstructed LocoScript. You can insert new discs, select and create files, and edit just as you did before.

LocoSpelling

Your new LocoSpell first shows its colours (green) during editing, when you press the f7=Modes key. As well as the four standard options, there's a new menu entitled Check spelling.

This houses another four options: All of document, Just forwards from here, Single word and User dictionary upkeep. All fairly obvious, with Just forwards from here using the current cursor position to start checking from and Single word just checking the word beneath the cursor. User dictionary upkeep allows you to check the words you've added to your personal file, of which more anon.

Selecting All of document puts LocoSpell into action. It starts at the top and word by word checks the verbiage within. If it finds a word that it doesn't know about it highlights it and puts up a menu detailing the actions you can take.

The word itself is printed at the top of the menu, with LocoSpell's suggested alternative below it. You can choose to use this replacement, or use it and edit it, or just edit the offending word. You can also check the dictionary around the area of the proposed replacement, ignore the word altogether, mark it as correct or add it to your personal dictionary.

These options can either be selected using the cursor keys in the traditional manner or by typing the initial letter. The default action is to take LocoSpell's suggestion and replace the original misshaped word with it. This works quite well, but of course can be hopelessly wrong.

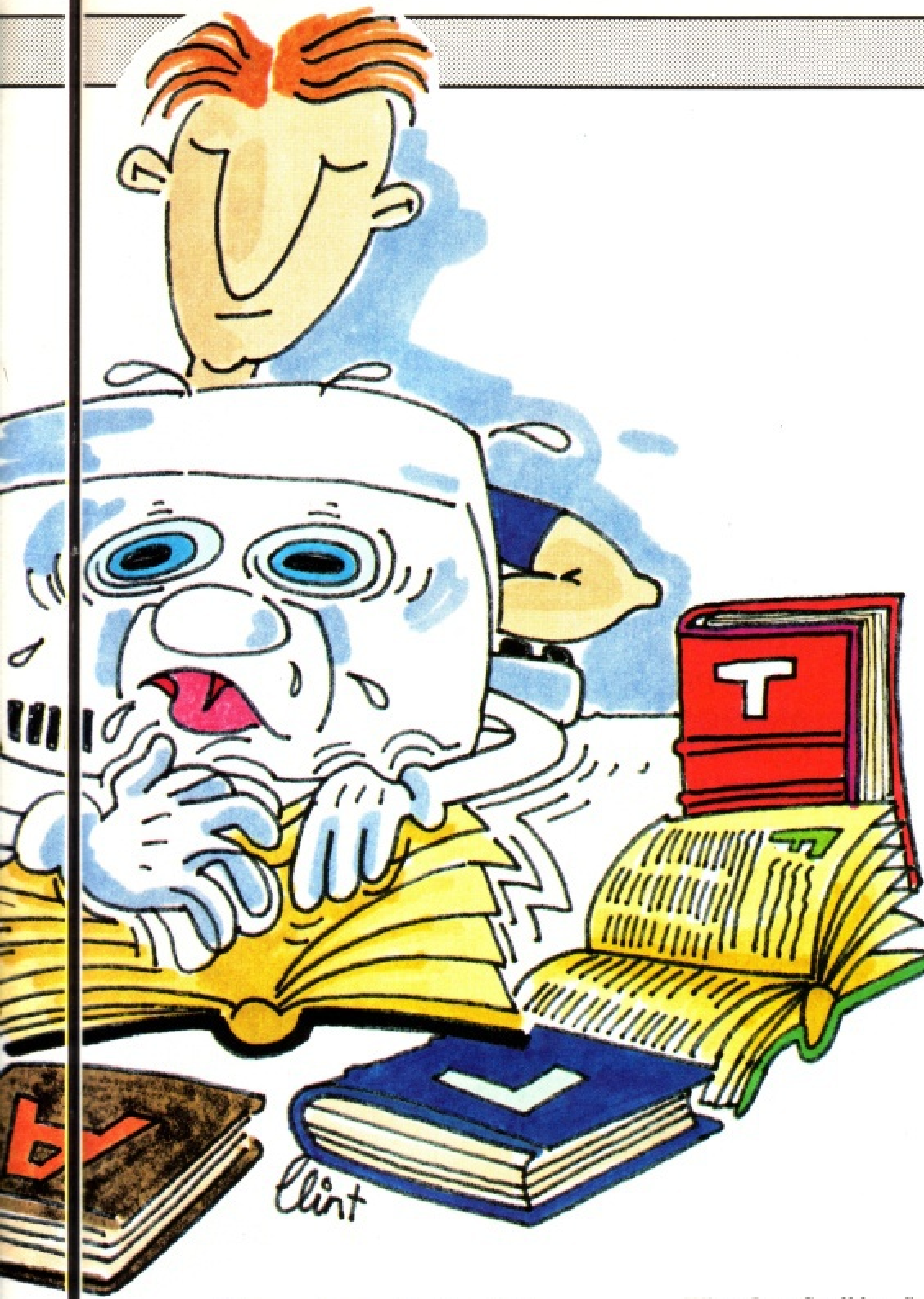
Consulting the dictionary is fairly painless. Your miscreant word is displayed at the top of a list of 18 nearest spellings. You can either edit your word, in which case 18 new selections are displayed, or scan up and down the list with the cursor keys.

Moving off the top or bottom causes the list to change as more words are retrieved from the dictionary. Finally, pressing Enter installs the currently highlit word in the Replacement box of the corrections menu.

The first few times you use LocoSpell, you'll probably spend most time adding your sort of jargon, proper nouns and your 100 fav. abbrvs. into your dictionary. It depends on your field (and style) of writing.

You'll also start using your olde-style ink and woodpulp dictionary, both to check that your word really exists (even though LocoSpell has never heard of it), and to find out what that strange replacement word proffered in place of your malediction means.

And there are some strange words in LocoSpell's dictionary. Tuataras feature, as do kungs, kudus and kyphotic labdanums. It's really quite an education!



How does it do it?

So how does LocoSpell decide on a word's validity? Firstly, it looks for 'killer' characters. These, if present, automatically cause the program to give up, pass the word and go onto the next one.

Killers include most of the special symbols such as ß, &, § and numbers (so PCW8512 passes). Single letter words (I, a, and so on) are passed, as are any words over 32 characters long.

While this could conceivably cause problems with some specialist applications, the fabled letter to the bank manager won't be affected unless you want that loan for biochemical research. A word is also ignored if it has (SiC code) in it.

And if a word is still being examined after all those checks it gets compared against the relevant part of the current main dictionary and then the User dictionary.

If it finds a match LocoSpell goes on to the next word, otherwise it highlights the prodigal particle and goes into the correction menu described above.

When LocoSpell has finished its check it comes up with a wordcount and a count of the words that you've added to your user dictionary.

It asks whether you want to add these permanently, and then dumps you back in your document. And there you have your perfectly spelled, wonderfully laid out and carefully counted work of literary art.

Knot perfect

Butt be wear! Spooling chequers cairn knot sore tout awl yaw mouse takes. Fur exam pill, thighs sent an says wood parse thee taste, butter vary floored inn money wheys. Sew doughnut eggs pecked too prod ewes whirred purr flecked prows jest buy Low cow chucking it!

So using LocoSpell is painless. It's not particularly fast (about a line of text a second), but it is easy and logical, and it does work.

However that's only half the story. LocoSpell lives and dies by its dictionaries. As described, two are supplied, but you can add dictionaries almost willy-nilly. And thus springs forth the need for dictionary maintenance.

Memory hungry

The troubles start almost immediately if you have a 256k machine. Drive M in this case is only big enough for the 32,000 word dictionary, so you have to use the larger dictionary directly from floppy disc.

The way in which LocoSpell looks for the dictionaries to use is similar to LocoScript and templates; if it can't find one in the group it's working in it starts to scan other groups on the same disc, and other discs, until it finds something it can use.

So if you've got a number of user dictionaries, or one of the technical ones mentioned earlier, some care is needed in planning where to store them. Dictionaries can be added together, and this can help to rationalise a sprawling set of personal files.

Having said this, the system can be set up to almost any requirement, as long as you keep your wits about you, by copying, moving and deleting files on various discs. This is covered in some depth in the manual.

Owners of fat Joyces have a much better time of things than those stuck with the anorexic version, as all the big stuff is only really happy with 800k discs and 300k-odd M drives.

Ah yes, the manual. The LocoSpell documentation is up to the standard of the original LocoScript tomes, wink wink. But the approach works much better for LocoSpell, as there are far fewer options and a much more linear way of working than for a full blown word processor.

Everything's there, and there's a Step-by-step quick reference guide at the back. It also describes how to combine Locomail with LocoSpell, should you so wish. Once you've got your system set up, you'll probably never need to refer to it, as LocoSpell itself is fairly self explanatory.

In conclusion then, LocoSpell does the job admirably. Not very fast, true, but much, much faster than checking by eye.

It has a few problems with plurals and odd declensions, quite often it will recognise the singular of a word but not the plural. Nevertheless, it has to be the first spelling checker to consider.

Like LocoMail, its easy integration with LocoScript makes it very easy to use, especially for the hardened LocoScripter. It works well on a 256k machine, but better still on a dual drive, 512k PCW.

If you use your Joyce at all regularly then it must be an essential purchase. And a good excuse to upgrade! ACU

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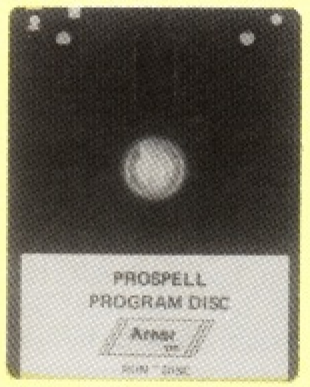
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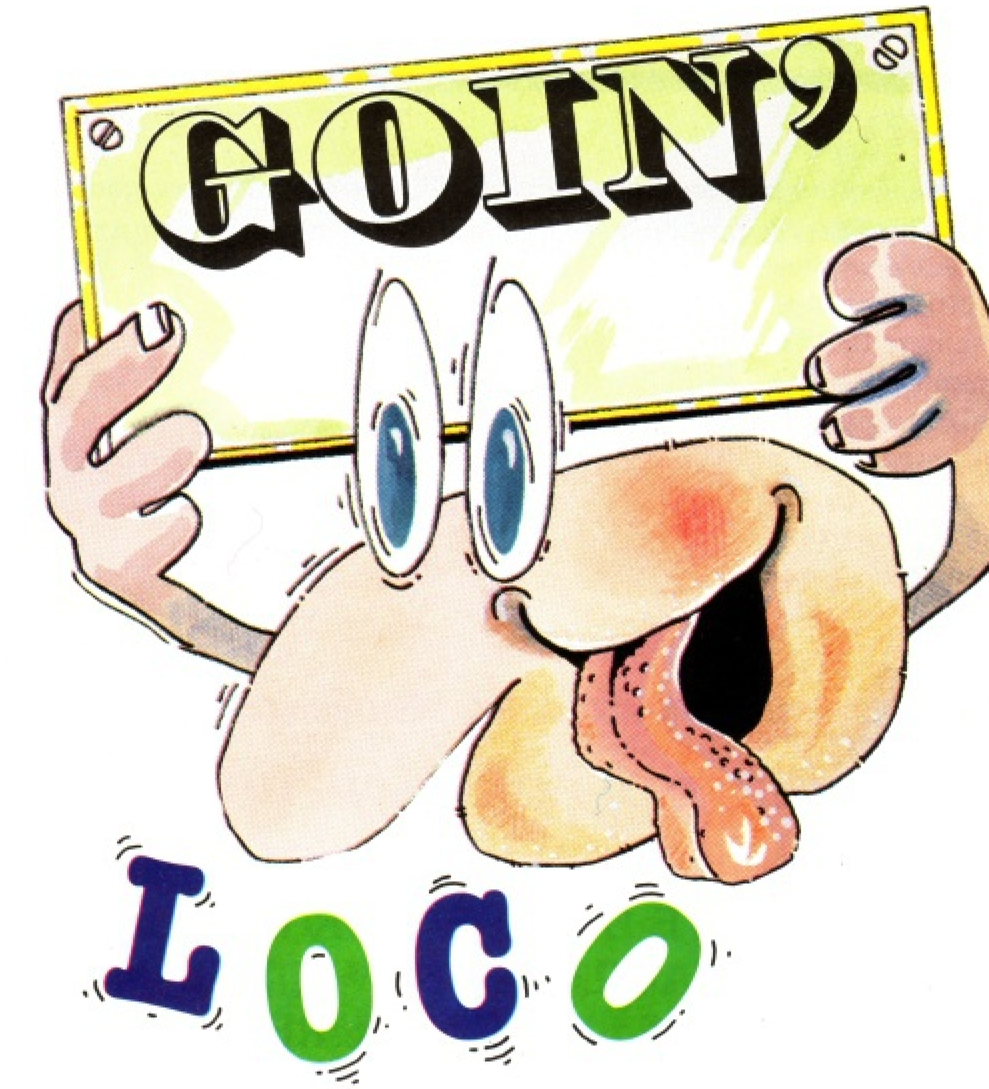
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Alexander Martin looks further into graphics functions

Last month I looked at the graphics commands Plot, Draw and Move and their relatives (I must get a new joke, this one's wearing out). This month I am going to talk about the graphics functions which return useful information about what's going on in the graphics world – almost as interesting as reading Campaign. Then we'll have a look at a few applications.

Cursors, foiled again

If you remember, there is a pair of numbers hidden away in the computer called the graphics cursor. This is the position where the last graphics command ended up.

There is a useful pair of functions which tell you where this place is, one for the X coordinate and one for the Y. The function Xpos returns the position across the screen and the function Ypos the position up it.

Again remember that Xpos doesn't return the number of pixels across the screen but a value which gives it's position for all screen modes. Ypos always gives a value that is twice the number of pixels in the current screen mode. All screen modes have the same number of pixels up and down – 200 – but in coordinates there are 400 positions.

The use of a coordinate system makes the graphic system more flexible and better but more complex. One advantage is that it means a circle drawn on the screen will be properly proportioned and not elliptical. And a square will be square if it is the same number of positions across as up.

Arc Venture

Here is a demo that shows Ypos and Xpos being used to return the coordinates at the edge of a circle. Xpos and Ypos are used separately to get the current location rather than recalculate it in line 80.

```
10 DEG 20 MODE 1
30 ORIGIN 320,200
40 FOR d=0 TO 360
50 MOVE 0,0
60 DRAW SIN(d)*99,COS(d)*99,1
70 LOCATE 1,22:PRINT USING "X: R#RR#RR#R
   Y: R#RR#RR#R";XPOS,YPOS
80 x=XPOS:y=YPOS
90 DRAW 0,0,0
100 PLOT x,y,2
110 NEXT d
```

A relatively testing time

The other graphics functions are Test and Testr. These are similar to Plot commands, using an X and Y coordinate to examine a pixel position.

The result returned by the Test commands is the value that the ink is set to at the screen position being tested. Test and Testr move the graphics cursor to the position being tested.

Test has many uses. Often it is used in Basic games as a way of testing for collisions. For example, in a bat and ball game the next position of the ball is tested and if the pixel is the same value as the bat, then it must be the bat and the ball is bounced.

Test can also be used to copy or pick up an image from the screen by repeatedly scanning across and reading the pixels. Test is used by Basic screen dump programs to scan the screen image and convert it to characters.

The first test

The first of my demos for Test is a pattern drawing program. The graphics cursor is moved around, randomly drawing square shapes. As the cursor is moved, the next position is tested and if it is not ink 0 (the backgound in this case), the ink to plot with is changed.

```
10 MODE 0
20 DRAW 0,398,1:DRAW 638,398:DRAW 638,0:
   DRAW 0,0
30 FOR n=0 TO 3:READ x(n):NEXT
40 FOR n=0 TO 3:READ y(n):NEXT
50 DATA 0,4,0,-4
60 DATA 4,0,-4,0
70 x=320:y=200:dir=1:i=1
80 '
90 '
100 r=r-1:IF r<0 THEN r=INT(RND*15):dir=
    dir+1:dir=dir MOD 4
110 xa=x(dir):ya=y(dir)
120 x1=x+xa:x1=MIN(638,x1):x1=MAX(0,x1):
    x=x1
130 y1=y+ya:y1=MIN(398,y1):y1=MAX(0,y1):
    y=y1
140 p=TEST(x,y):IF p<>0 THEN i=i+1:i=i M
    OD 14:IF i=0 THEN i=i+1
150 PLOT x,y,i
160 GOTO 100
```

Who is the fairest of them all . . .?

The next mega listing mirrors the contents of the left side of a Mode 0 screen on to the right. Type it in, enter Mode 0 and list the program to fill the screen with text. Now run the program and '!otserp yeh' a couple of minutes later you get a mirror image.

```
10 FOR x=0 TO 320 STEP 4
20 FOR y=0 TO 400 STEP 2
30 a=TEST(x,y):PLOT 640-x,y,a
40 NEXT y,x
```

Think big

Now for something bigger. This program

scans a line of text printed on the screen and draws it enlarged. Note the For Next loops include Step commands. Not only does this speed up the process, it ensures that pixels are only read once.

```
10 MODE 0
20 a$="It's Big!"
30 LOCATE 1,1
40 PRINT a$
50 FOR x=0 TO (LEN(RIGHT$(a$,10))*32)STE
   P 4
60 FOR y=0 TO 16 STEP 2
70 MOVE 0,382:pix=TESTR(x,y)
80 MOVE 0,300:PLOTR 2*x,2*y,pix
90 MOVE 0,200:PLOTR 3*x,3*y,pix
100 MOVE 0,100:PLOTR 4*x,4*y,pix
110 MOVE 0,0:PLOTR 5*x,5*y,pix
120 NEXT y,x
```

Let's play tag

Right, now we've done the functions let's go on to look at Tag. Clever little title that. Tag is short for Text At Graphics.

The purpose of Tag is to print text at the graphics cursor instead of the text cursor position. This allows you to do all sorts of exciting things like putting place names on maps.

The text can be positioned to the nearest pixel or overlap another piece of text. Characters do not have to slot into character positions.

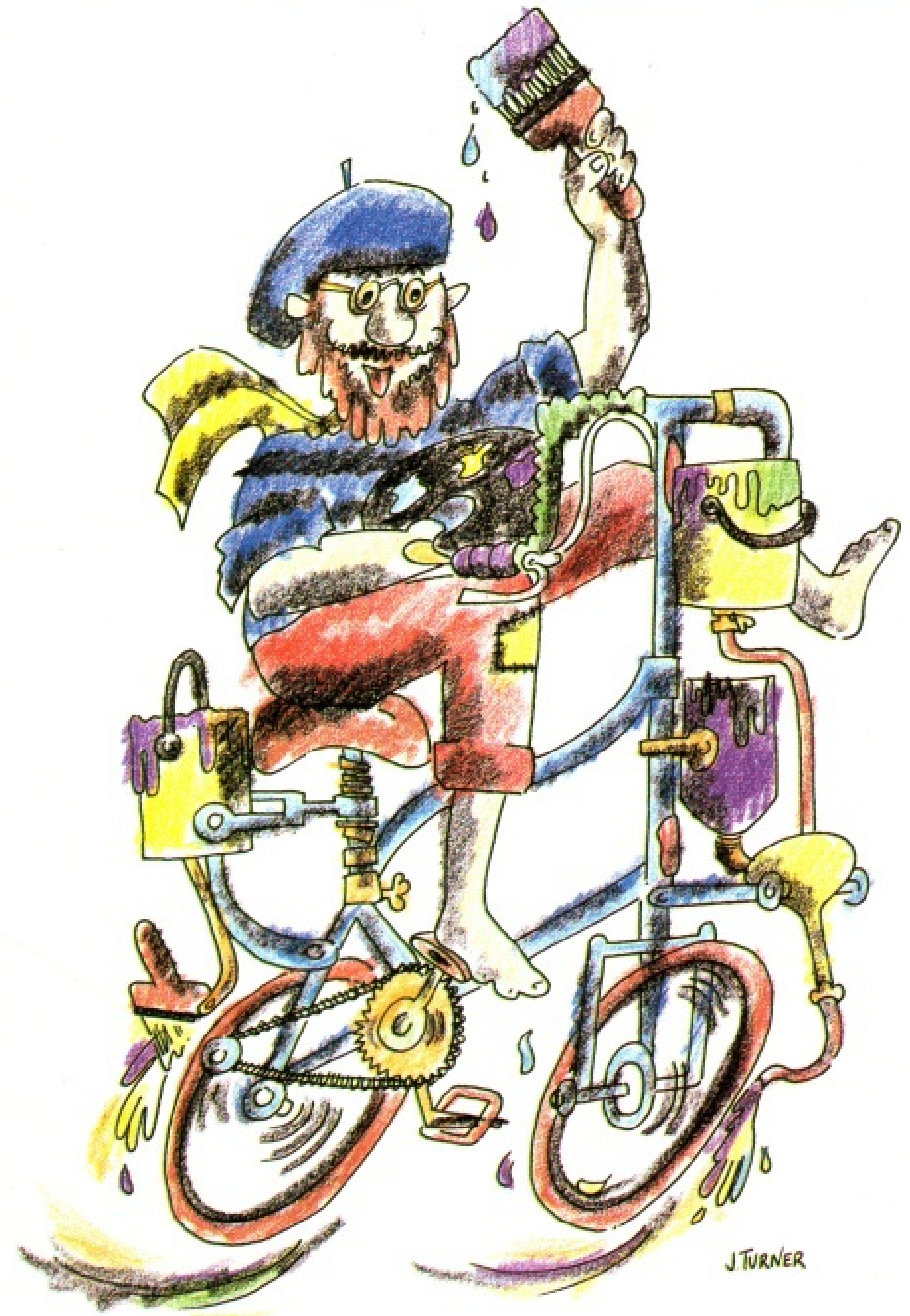
Tag can have a stream number attached to it. This is so that normal text at character positions can be kept conveniently separate from the text at graphic positions.

Tag is a bit too slow to be used to smooth scroll an image in a Basic game or other application, but it is very useful for all sorts of other purposes.

This is a simple demo of Tag. Anything that you type into the keyboard will be printed out as a character. Try control and the cursor keys. It is worth mentioning that any control characters printed using Tag will have no effect.

Any character sent to the graphics stream will be assumed to be a printable character. This includes carriage return and line feed issued at the end of a print command. Use the semicolon symbol at the end of the command to suppress this.

```
10 TAG
20 MOVE 100,100
30 PRINT a$;
40 a$=INKEY$:IF a$=""THEN 40
50 GOTO 20
```



The next program is a bit more exciting than the others. It uses the control character Chr$(5), which sends the next printed character to the graphics stream and is one character equivalent to Tag.

The program fills up the screen with small blocks and then starts off a ball. This bounces around the screen knocking out the blocks until you stop the program.

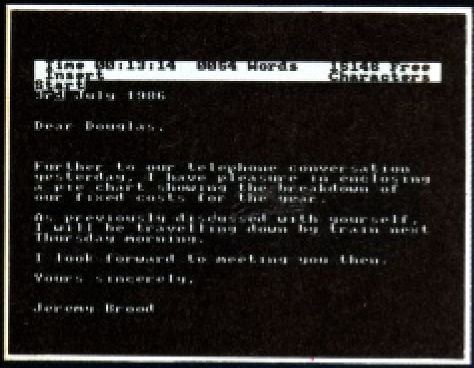
Having written the program I decided that it would be possible to monitor the computer's progress at clearing the screen of blocks. So I put in a couple of lines that draw a graph showing how many blocks had been hit in a certain amount of time.

```
10 DEFINT a-z
20 MODE 1
30 DIM xcord(64),ycord(36),scr(64,36)
40 FOR x=2 TO 640 STEP 10:xcord(x1)=x:x1
   =x1+1:NEXT
50 FOR y=46 TO 398 STEP 10:ycord(y1)=y:y
   1=y1+1:NEXT
60 t$=CHR$(23)+CHR$(1)+CHR$(5):b$=CHR$(2
   3)+CHR$(0)
70 block$=t$+CHR$(1[illegible])+b$:ball$=t$+CHR$(
   255)+b$
80 SYMBOL 255,96,240,240,96,0,0,0,0
90 '
100 '
110 FOR y=0 TO 34:FOR x=0 TO 63:
120 IF INT(RND*2)=1 THEN scr(x,y)=1 :MOV
    E xcord(x),ycord(y):PRINT block$;
130 NEXT x,y
140 '
150 '
160 x=10:y=10:ax=1:ay=1:ox=9:oy=9
170 MOVE xcord(x),ycord(y):PRINT ball$;
180 '
190 WHILE-1
200 IF x+ax=-1 OR x+ax=64 THEN ax=-ax
210 IF y+ay=-1 OR y+ay=36 THEN ay=-ay
220 ox=x:oy=y:x=x+ax:y=y+ay
230 IF scr(x,y)=1 THEN scr(x,y)=0:MOVE x
    cord(x),ycord(y):PRINT block$;:GOSUB
     300
240 MOVE xcord(ox),ycord(oy):PRINT ball$
    ;
250 IF t!<TIME THEN t!=TIME+3000:x=MAX(x
    -1,0):tx=tx+10:MOVE gx,gy:DRAW tx,n*
    4,3:gx=XPOS:gy=YPOS:n=0:PLOT gx,0,1
260 MOVE xcord(x),ycord(y):PRINT ball$;
270 WEND
280 '
290 '
300 IF toggle THEN toggle=0:ax=-ax ELSE
    toggle=-1:ay=-ay
310 SOUND 1,20,4
320 n=n+1
330 RETURN
```

While we are talking about graphs here is short program that draws a simple one from data. If you know very little about programming but the idea of drawing a graph of your own appeals to you then study this and see if you can adapt it.

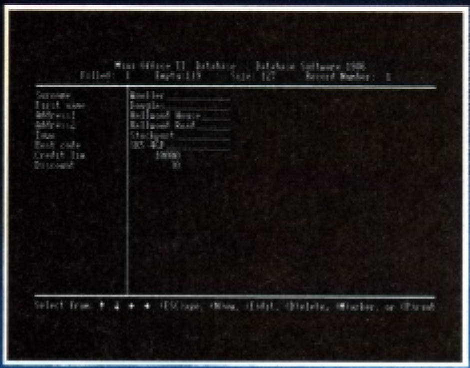
```
10 CLS
20 DIM month(12)
30 DATA 30,40,60,25,38,48,22,40,42,53,75
   ,32
40 FOR n=1 TO 12
50 READ month(n)
60 NEXT n
70 MOVE 0,0:DRAWR 0,300:MOVE 0,0:DRAWR 3
   00,0
80 '
90 MOVE 0,0
100 FOR n=1 TO 12
110 DRAW n*20,month(n)*4
120 NEXT n
```

All this in just

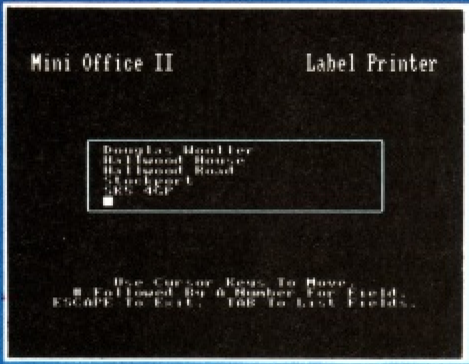


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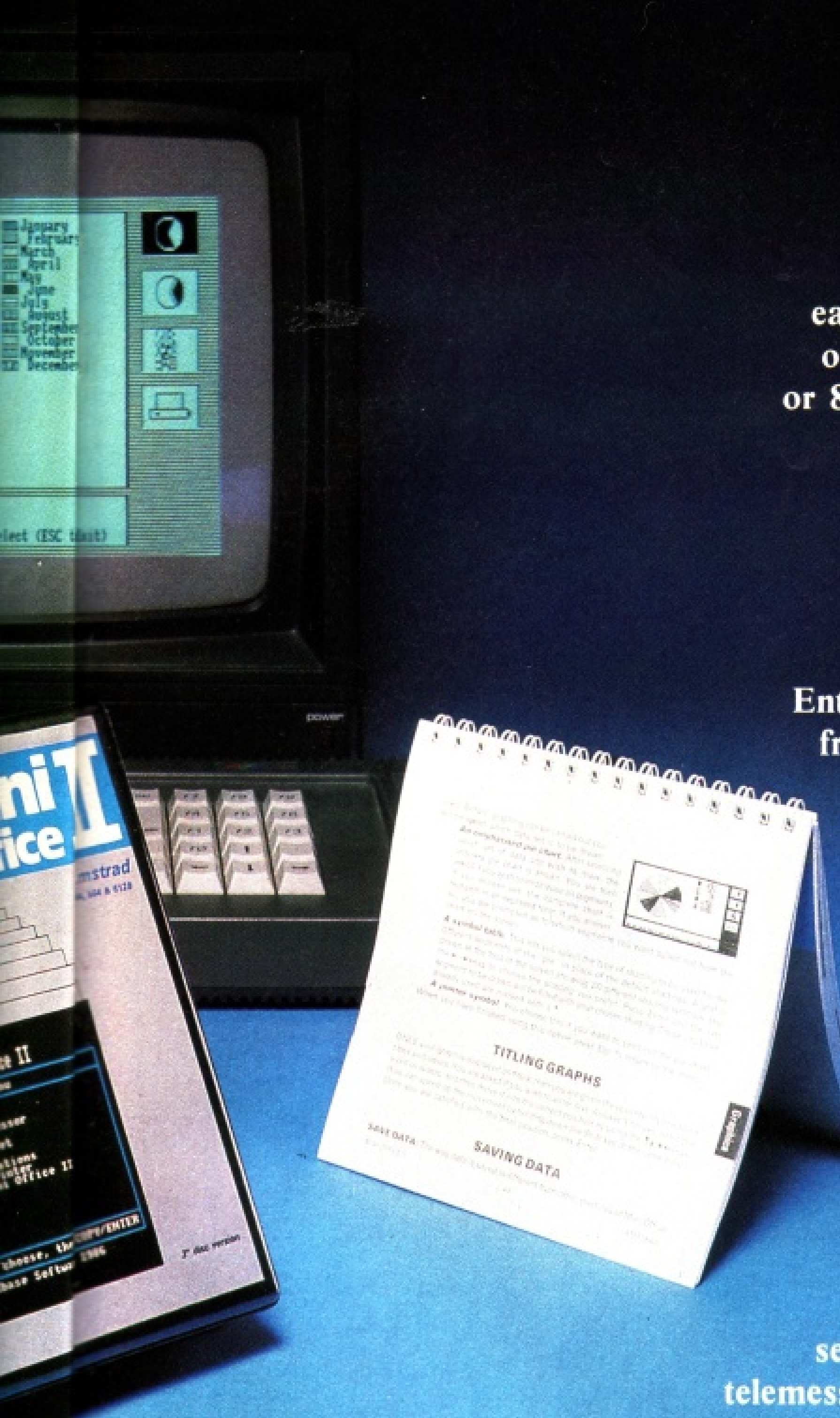
Yet possibly the best advertisement for Mini Office II is that it comes from the same stable that produced the original Mini Office package back in 1984.

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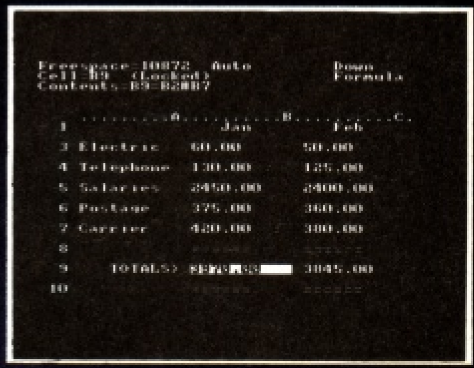
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t ONE package!



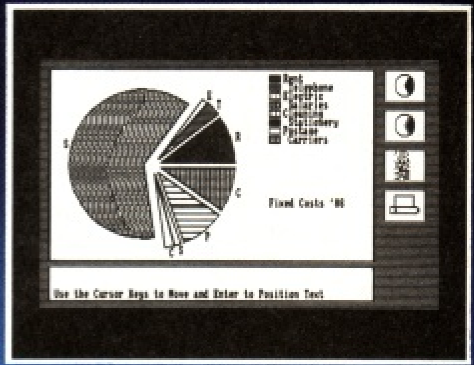
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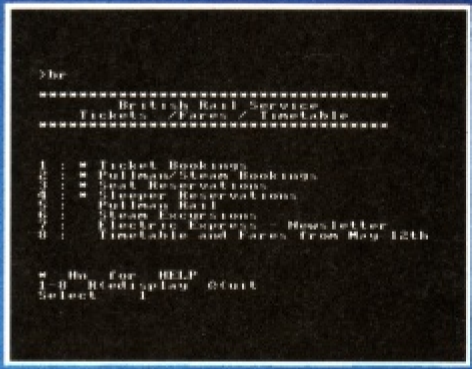
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Be a Pinball Wizard



This pinball game has a difference – a built in breakout. PCW owners beware, this will only run on a CPC but it has been tested on both the 464 and 6128. So if you miss the local cafe with its Black Knight and fruit machine you'd better type this in and flex those fingers.

```
10 REM ==============================
20 REM ========== PINBALL ==========
30 REM ======= by D. CROMWELL ======
40 REM ==============================
50 REM == ALL REMS ARE REMOVEABLE ==
60 REM === AND CAN    BE OMITTED ===
70 REM ==============================
100 SYMBOL AFTER 256
110 MEMORY 24999:SYMBOL AFTER 33
120 RESTORE 2240:FOR j=25000 TO 25074
130 READ a:POKE j,a:NEXT
```

```
140 REM ====== GAME SET UP ======
150 GOSUB 1850:GOSUB 1480
160 PEN 2:LOCATE 3,8
170 PRINT"Press <SPACE> to start game";
180 FOR j=1 TO 3:LOCATE 2,j+3
190 PRINT STRING$(15,"%");:NEXT
200 WINDOW 34,39,5,20
210 PRINT"SCORE:          0"
220 PRINT:PRINT:PRINT" High Scores "
230 FOR j=1 TO 5
240 PRINT USING"######";h(j);
250 NEXT:WINDOW 1,40,1,25
260 pn=240:sc=0:in=0:bal=5
270 PEN 1:LOCATE 32,24:PRINT "(((((";
280 MOVE pn,46:DRAWR 46,0,1
290 WHILE INKEY(47)=-1:WEND
300 LOCATE 2,8:PRINT SPACE$(29);
310 x=31:y=24:dx=0:dy=0
320 LOCATE 31+bal,24:PRINT " ";
330 LOCATE 31,24:PRINT "(";
340 FOR j=1 TO 100:NEXT
350 PEN 1:LOCATE 31,25:PRINT "*";
360 FOR j=1 TO 100:NEXT
370 PRINT CHR$(8);")";:PEN 2
380 WHILE dx=0:GOSUB 770
390 FOR j=1 TO 20:NEXT
400 GOSUB 720:WEND
410 WHILE y<25:GOSUB 880
420 GOSUB 720
430 WEND
440 REM ====== LOST BALL ======
450 SOUND 7,500,10:PEN 1:LOCATE x,y
460 PRINT CHR$(130);:bal=bal-1
470 PEN 2:LOCATE 30,10:PRINT " ";
480 IF bal>0 THEN 290
```

```
490 REM ====== GAME OVER ======
500 SOUND 3,60,200,10,0,1
510 LOCATE 13,8:PRINT"Game Over";
520 FOR k=1 TO 1500:NEXT
530 FOR j=1 TO 5:IF sc>h(j) THEN 550
540 NEXT:GOTO 630
550 FOR k=5 TO j+1 STEP -1
560 h(k)=h(k-1):NEXT:h(j)=sc
570 LOCATE 7,8:PRINT"You have achieved t
    he";
580 IF j=1 THEN LOCATE 10,9:GOTO 620
590 pl$="th":IF j=2 THEN pl$="nd" ELSE I
    F j=3 THEN pl$="rd"
600 j$=STR$(j):LOCATE 14,9
610 PRINT j$+pl$;:LOCATE 10,10
620 PRINT"highest score"
630 WHILE INKEY$<>"":WEND:FOR j=1 TO 150
    0
640 IF INKEY$<>"" THEN 660
650 NEXT
660 LOCATE 3,8:PRINT"Press <SPACE> to pl
    ay again";
670 LOCATE 10,9:PRINT SPACE$(13);
680 LOCATE 10,10:PRINT SPACE$(13);
690 MOVE pn,46:DRAWR 46,0,0
700 GOTO 180
```



```
710 REM ====== BAT CONTROL ======
720 po=pn:IF INKEY(34)<>-1 AND po>64 THE
    N pn=pn-16
730 IF INKEY(27)<>-1 AND po<368 THEN pn=
    pn+16
740 MOVE po,46:DRAWR 46,0,0
750 MOVE pn,46:DRAWR 46,0,1:RETURN
760 REM ====== BALL IN SHUTE ======
770 IF y=10 THEN 820
780 LOCATE x,y:PRINT " ";
790 y=y-1:IF y=10 THEN x=x-1
800 LOCATE x,y:PRINT "(";
810 RETURN
820 dx=-1:dy=CINT(RND)
830 PEN 1:LOCATE x,y:PRINT "!";
840 PEN 2:x=x-1:y=y+dy
850 LOCATE x,y:PRINT "(";
860 RETURN
```

```
870 REM ====== BALL MOVEMENT ======
880 ox=-dx:oy=-dy:GOSUB 1420
890 ON PEEK(24995) GOTO 1010,900,900,910
    ,930,960
900 dx=-dx:GOTO 1010
910 dy=1:dx=0:GOTO 1010
920 GOTO 1010
930 LOCATE x+dx,y:PRINT" ";
940 SOUND 1,200,0,0,1:in=20:GOSUB 1340
950 dx=-dx:GOTO 1010
960 SOUND 2,250,0,0,1:in=50:GOSUB 1340
970 dx=-dx:IF dy=0 THEN dy=SGN(INT(RND*7
    -3)):GOTO 990
980 dy=CINT(RND)*dy
990 GOSUB 1430:IF PEEK(24997)=1 THEN 101
    0
1000 dy=-dy:GOTO 1300
1010 ON PEEK(24996) GOTO 1210,1020,1030,
     1300,1040,1070,1150,1170
1020 dy=-dy:GOTO 1300
1030 dx=1:GOTO 1300
1040 LOCATE x,y+dy:PRINT " ";
1050 SOUND 1,200,0,0,1:in=20:GOSUB 1340
1060 dy=-dy:GOTO 1300
1070 SOUND 2,250,0,0,1:in=50:GOSUB 1340
1080 dy=-dy:IF dx=0 THEN dx=SGN(INT(RND*
     7-3)):GOTO 1100
1090 dx=CINT(RND)*dx
1100 IF dx=0 AND dy=0 THEN dx=ox:dy=oy:G
     OTO 1300
1130 GOSUB 1430:IF PEEK(24997)=1 THEN 13
     00
1140 dx=-dx:GOTO 1300
1150 SOUND 4,170,0,0,1:in=100:GOSUB 1340
1160 dy=-dy:GOTO 1300
1170 IF po<pn AND dx<1 THEN dx=dx+1
1180 IF po>pn AND dx>-1 THEN dx=dx-1
1190 IF x=26 AND dx=1 THEN dx=-1
1200 dy=-dy:SOUND 1,338,0,0,1:GOTO 1300
1210 IF PEEK(24996)*PEEK(24995)<>1 THEN
     1300
1220 ON PEEK(24997) GOTO 1300,1230,1230,
     1300,1240,1260,1300,1290
1230 dy=-dy:dx=-dx:GOTO 1300
1240 LOCATE x+dx,y+dy:PRINT" ";
1250 dx=-dx:GOTO 1050
1260 SOUND 2,250,0,0,1:in=50:GOSUB 1340
1270 IF RND>0.5 THEN dx=-dx:dy=0:GOTO 13
     00
1280 dx=0:dy=-dy:GOTO 1300
1290 dy=-1:dx=0:SOUND 1,338,0,0,1
1300 LOCATE x,y:PRINT " ";
1310 x=x+dx:y=y+dy:LOCATE x,y
1320 PRINT"(";:RETURN
```

```
1330 REM ====== SCORE ROUTINE ======
1340 IF sc<10000 AND sc+in>9999 THEN GOS
     UB 1380
1350 sc=sc+in:LOCATE 34,7
1360 PRINT USING"######";sc;
1370 RETURN
1380 bal=bal+1:LOCATE 30+bal,24
1390 PEN 1:PRINT "(";
1400 PEN 2:RETURN
1410 REM ==== MACHINE CODE CALL ====
1420 POKE 24990,y:POKE 24991,x
1430 POKE 24992,(256+dx) MOD 256
1440 POKE 24993,(256+dy) MOD 256
1450 CALL 25000
1460 RETURN
1470 REM ====== TABLE PRINTOUT ======
1480 INK 0,0:INK 1,6:INK 2,26:INK 3,18
1490 MODE 1:BORDER 1:PEN 1:PAPER 0
1500 PRINT STRING$(31,"!")
```

```
                                   !!!! !   ! !!
1510 PRINT"!
       !!"                         !!
1520 PRINT"!
       !!"                         !
1530 PRINT"!
       !!"                         !
1540 PRINT"!
       !!"
1550 PRINT"!
       !!"
1560 PRINT"!
       !!"
1570 PRINT"!
        !"
1580 PRINT"!
      !!!"
1590 PRINT"!
        !"                         !!!
1600 PRINT"!
      !  !"
1610 PRINT"!
      !  !"
```

```
1620 PRINT"!   !
     !  !"
1630 PRINT"!   !                                  !
     !  !"
1640 PRINT"!   !                                  !
     !  !"
1650 PRINT"!   !                                 #!
     !  !"
1660 PRINT"!   !                                  #
     !  !"
1670 PRINT"!   !                  !           $
     !  !"
1680 FOR j=1 TO 4
1690 PRINT"!   !                              !
     !  !"
1700 NEXT
1710 PRINT"!   !                              !
     !  !!!!!!"
1720 PRINT"!
     !         !"
1730 PRINT"!
     !)!!!!!!"
1740 LOCATE 5,20:PRINT "!";
1750 PEN 3:FOR j=1 TO 29:READ x,y
1760 LOCATE x,y:PRINT "&";:NEXT
1770 PEN 2:FOR j=1 TO 11:READ x,y
1780 LOCATE x,y:PRINT "'";:NEXT
1790 MOVE 0,399:DRAWR 320,0,1
1800 MOVE 0,0:DRAWR 478,0
1810 LOCATE 33,2:PEN 3
1820 PRINT"PINBALL":RETURN
1830 REM ====== GRAPHIC SET UP ======
```

```
1840 REM ====== AND TITLE PAGE ======
1850 SYMBOL 33,255,255,255,255,255,255,2
     55,255
1860 SYMBOL 35,255,127,63,31,15,7,3,1
1870 SYMBOL 36,128,192,224,240,248,252,2
     54,255
1880 SYMBOL 37,126,126,126,126,126,126,0
     ,0
1890 SYMBOL 38,60,66,153,189,189,153,66,
     60
1900 SYMBOL 39,0,126,24,60,102,102,255,2
     55
1910 SYMBOL 40,0,56,124,254,254,124,56,0
1920 SYMBOL 41,126,126,24,56,28,56,28,56
1930 SYMBOL 42,0,0,0,0,0,126,126,60
1940 SYMBOL 129,255,0,0,0,0,0,0,0
1950 SYMBOL 130,0,0,0,0,0,0,0,255
1960 ENV 1,6,-2,3:ENT 1,100,5,2
1970 FOR j=1 TO 5:h(j)=1000:NEXT
1980 CALL &BC02:INK 2,18
1990 MODE 1:LOCATE 17,4
2000 PEN 1:PRINT"PINBALL"
2010 MOVE 256,332:DRAWR 110,0,3
2020 LOCATE 13,7
2030 PRINT"by D. Cromwell"
2040 PEN 2:WINDOW 3,37,10,25
2050 PRINT" Guide the ball around the pi
     nball"
2060 PRINT"table using the bat."
2070 PEN 1:PRINT
2080 PRINT"   Controls :- <O> moves bat
     left"
2090 PRINT"                <P> moves bat
     right"
2100 PRINT"       <SPACE> releases the bal
     ls"
2110 PEN 3:PRINT
2120 PRINT"SCORES : ' - 100 pts   & - 50
     pts"
2130 PRINT:PRINT TAB(10)"A brick -  20 p
     ts"
2140 PEN 2:PRINT
2150 PRINT"A bonus ball is given at 1000
     0 pts"
2160 PRINT:PRINT"          Press any key to
     start"
2170 WHILE INKEY$<>"":WEND
2180 CALL &BB18:RETURN
2190 REM ==== MACHINE CODE DATA ====
2200 REM == START ADDRESS : 25000 ==
2210 REM ==== LENGTH : 75 BYTES ====
2220 REM == ENTRY POINT    : 25000 ==
2230 REM = + Screen positions data =
2240 DATA 42,158,97,58,160,97,132,103
2250 DATA 245,205,117,187,205,96,187
2260 DATA 221,33,163,97,205,218,97,42
2270 DATA 158,97,58,161,97,133,111,205
2280 DATA 117,187,205,96,187,221,35
2290 DATA 205,218,97
2300 DATA 241,205,111,187,205,96,187
2310 DATA 221,35,6,8,33,235,97,190,40,5
2320 DATA 35,16,250,6,1,221,112,0,201
2330 DATA 129,39,38,37,35,36,33,32
2340 DATA 21,2,27,2,19,3,29,3,18,4,30,4
2350 DATA 21,5,27,5,24,6,20,7,28,7,31,8
2360 DATA 24,9,6,10,15,11,19,11,15,12
2370 DATA 19,12,29,13,10,14,24,14,28,15
2380 DATA 5,16,5,17,17,17,5,18,16,18
2390 DATA 18,18,5,19
2400 DATA 3,1,6,1,9,1,12,1,15,1,23,2
2410 DATA 24,2,25,2,16,12,17,12,18,12
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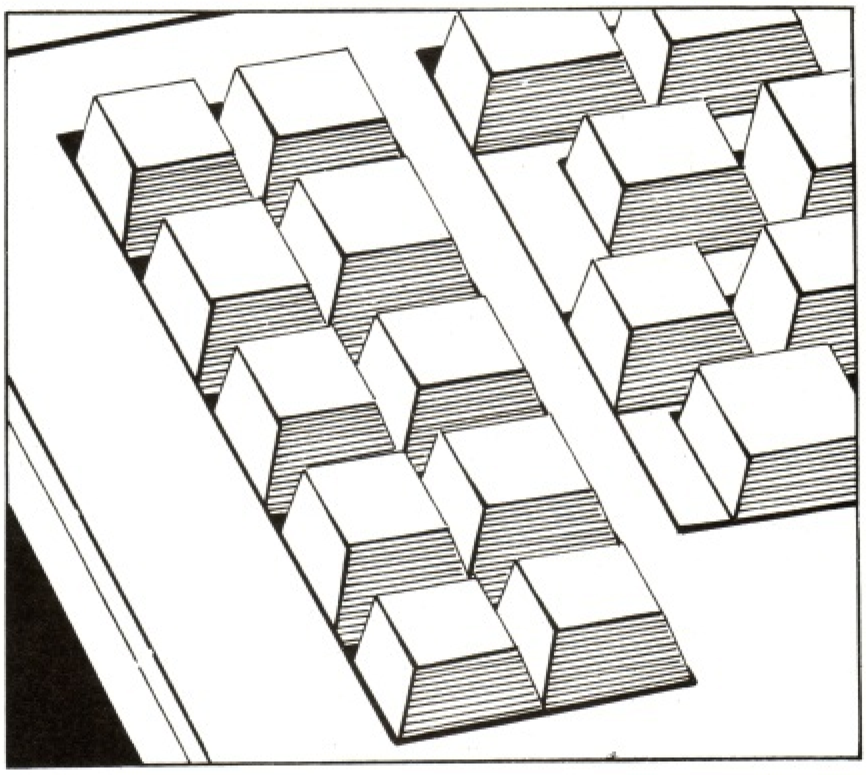
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Defining MS-Dos function keys



Robert Shifreen describes a way to make programming the PC1512 much easier

Like many micros, the PC1512 has a set of function keys. These are on the left of the keyboard, labelled F1 to F10. Although they are used to good effect by most commercial programs, there is no MS-Dos command that allows you to define them yourself.

You may be surprised, therefore, to learn that there is a very simple way to define the function keys. Using this method you can assign either a single character or a whole string to a function key, which can be used at the MS-Dos prompt level to make entering long commands easier.

There are 40 different function keys that can be programmed. This is because, as well as the normal 10 keys labelled F1 to F10, each can also be pressed in combination with either Ctrl, Alt or Shift.

This article will explain how to define the function keys in such a way that the definitions are available whenever you start up the computer using MS-Dos. As an example, it explains how to set up the function key F10 so that it produces a DIR command followed automatically by a carriage return. Once this is done, you simply have to press F10 at the MS-Dos prompt to get a directory listing.

The key to having definable function keys is a program called ANSI.SYS, which is on the MS-Dos 3.2 system disc. Don't confuse this program with ANSI.COM, which is not the same.

ANSI.SYS is a special type of program known as a device driver. When the program is loaded it remains in the computer's memory all the time, examining every key that you type. If the key is recognised as being a special one, the ANSI program performs a function associated with that key or combination of keys.

For example, if you type an ESCAPE character followed by a left square bracket, followed by a number 2, followed by a J followed by a carriage return, the screen will be cleared and the cursor returned to the top left hand corner. The ANSI program monitors the keyboard and, when it detects that special combination of keys, it clears the screen.

Once you have ANSI loaded into memory a number of these special key combinations are available. By far the most useful is to be able to redefine any key on the keyboard so that it acts like any other. You could, for example, make the Return key act like a backspace, though you'd have great problems if you did that!

So to assign one or more characters to the function keys you just have to use the appropriate ANSI commands. You simply type out the special combinations of characters, and ANSI will do the rest. To type out the ANSI commands, we put the commands into a file and then TYPE the file.

The first step then is to load the ANSI device driver program. If the program is not loaded the special commands will not work.

Because the program is a device driver, you can't just load it by typing ANSI. Instead, you have to have a file on your MS-DOS disk called CONFIG.SYS, which in turn must contain a line that says:

DEVICE = ANSI.SYS

The MS-Dos disc supplied with the PC1512 already has a CONFIG.SYS file on it, which is used by MS-Dos to set up the machine in a certain way every time you turn it on. Use the TYPE command to see if the DEVICE = ANSI.SYS command is in the file. Normally, it won't be, but your dealer may have put it there so it's worth checking.

If the line is not there, use the RPED program to edit CONFIG.SYS and add the line. It doesn't matter where about in the file it goes.

If you use MS-Dos from a hard disc, and ANSI.SYS is not in the top level, or root directory, you can include the full path name in CONFIG.SYS. So if you normally keep all the MS-Dos files in a directory called DOS, your line in CONFIG.SYS may look something like:

DEVICE = /DOS/CONFIG.SYS

If you do not have a CONFIG.SYS file at all, use RPED to create one.

Now you must make sure that the disc you use to start MS-Dos 3.20 has this CONFIG.SYS file on it, and also a copy of ANSI.SYS. Once this is done reboot the computer by pressing Ctrl-Alt-Del so that ANSI.SYS is loaded.

Incidentally, there is absolutely no harm in leaving ANSI.SYS loaded all the time. Although it will now always be in memory, it uses only around 1.5k, so it's not worth worrying about. It won't interfere with any other programs, but it will mean that you always have the ability to define the function keys.

If you want to know what other commands you can put in CONFIG.SYS see page 507 of Book 1. For a complete list of all the ANSI commands, see page 488.

Now that you have ANSI.SYS loaded, you can start defining the function keys. The way that this is done is as follows:

- Create a file on disc that contains the correct ANSI commands to redefine one or more function keys.
- TYPE the file, thus activating the commands.

If you want to make one file that defines a lot of function keys, the file will get pretty complicated. You may wish to write a Basic program to produce it for

you. The method I am going to use creates one small file for each function key. That way each function key can be defined separately or not at all.

As an example, let's set up key F10 to produce the command DIR. We'll also add a carriage return after the letters DIR, so that once the key is defined pressing F10 will automatically produce a directory. Once you know how to set up this key you should be able to set up any other function key that you want.

The format of the ANSI command to redefine a function key is:

ESC [k;dp

The k stands for the code of the key being defined, while the d stands for the code of the definition. To find out the value for k, look in this table:

Key	Normal	Shift	Alt	Ctrl
F1	0;59	0;84	0;104	0; 94
F2	0;60	0;85	0;105	0; 95
F3	0;61	0;86	0;106	0; 96
F4	0;62	0;87	0;107	0; 97
F5	0;63	0;88	0;108	0; 98
F6	0;64	0;89	0;109	0; 99
F7	0;65	0;90	0;110	0;100
F8	0;66	0;91	0;111	0;101
F9	0;67	0;92	0;112	0;102
F10	0;68	0;93	0;113	0;103

As you can see, the values consist of a zero followed by a semi colon and then a number. The value for F8, for example, is 0;66. The value for Ctrl–F5 is 0;98.

We want to define F10, so the code we need is 0;68.

The string we want to assign to F10 is DIR, followed by a carriage return. This is represented as:

"DIR";13

The characters DIR have been enclosed in quotes, as you can see. The carriage return on the end is represented by 13, which is the Ascii code for carriage return. The full list of Ascii codes is on page 484 of Book 1, if you want more details.

The "DIR" and the number 13 are separated by a semi colon. Now that we have the information we need, we can write down the complete ANSI command to redefine function key F10 as:

ESC [0;68;"DIR";13p

The ESC and the [signal the start of an ANSI command. Then comes the code for key F10 (0;68) followed by the characters we want to assign to that key. Finally, the small p ends the "define a function key" command.

Now that we have the correct command all that remains is to put it into a file and TYPE it. However there is one small problem yet to overcome. That is, how to get the ESC character (ESCAPE), into the file. Although there is an Escape key on the keyboard, it has a special function under MS-Dos.



If you don't believe me, try typing a line of text and then, before pressing Return, press Escape instead. What happens? The cursor moves down to the next line. Pressing Escape tells MS-Dos to abandon the command that is being typed and start again. This is all very useful, but it means that we will have to find another way of typing the Escape character (which has an Ascii code of 27, by the way).

The way round the problem is to use the DEBUG program. This MS-Dos utility program lets you edit any file, and to change any character. Because using DEBUG isn't much fun, we'll use a simpler method to enter the rest of the characters, and leave a space where the Escape character needs to be. Then we'll use DEBUG to insert the Escape character. If all this sounds rather complex, don't worry. Everything is quite straightforward and, after a few minutes practice, will seem very easy.

At the MS-DOS prompt, type:

COPY CON F10.PFK

This tells MS-Dos to copy a file from the keyboard into a file on disc called F10.PFK. Whenever you create these function key files use an extension of PFK to remind you that the file is for a programmable function key.

Now type:

Z[0;68;"DIR";13p

and press Return. You have now entered the ANSI command into the file. Type Ctrl–Z to finish, after which the MS-Dos prompt will return.

As you may have noticed, I used a Z instead of the Escape character. Now, we have to use DEBUG to replace that Z with a real Escape character.

Make sure that there is a copy of DEBUG.EXE on your current disc, and type:

DEBUG F10.PFK

You will be greeted by a hyphen prompt:

Type E100 and press Return (that's a letter E followed by 100). You will see something like:

3200:0100 5A.

though the number 3200 may be different. The 5A means that the first character in the file is currently a Z, which is what you typed.

Type:

1B

and press Return, to change the Z to a real Escape character.

The E100 means that you want to enter a character at address 100, which is the first position in the file. The 1B is the code (in hexadecimal) for Escape, which will overwrite the Z that was there before. Now type W and press Return. This will save the new version of the file to disc, in place of the old one.

Type Q and press Return, to leave DEBUG and return to the MS-Dos prompt.

That's it! All finished. To test your creation, type:

TYPE F10.PFK

to type out the file F10.PFK. You should not see anything typed on the screen. The screen will simply scroll up a line, and the MS-Dos prompt will return. The characters have been intercepted by the ANSI program and used to redefine the F10 key. To make sure, press F10 and watch as a directory listing appears on your screen.

If it doesn't work, make sure that you have ANSI.SYS loaded. If, when you TYPE F10.PFK, the characters from the F10.PFK file are displayed on the screen, it probably means that ANSI isn't loaded. If so, set up the CONFIG.SYS file as described above and in Book 1, and try TYPEing the file again. If it still doesn't work, use the DEL command to delete the F10.PFK file, and create it again from scratch.

Once everything is working you can put a TYPE F10.PFK command in an AUTOEXEC.BAT file, which will make sure that your function key definitions are available every time you start the computer with the MS-Dos system disc.

To finish, one piece of advice. The function keys F1 and F3 already have a useful purpose in MS-Dos. F3 automatically repeats the last command you typed, while F1 brings back just one character of that command each time you press it. If you use ANSI to redefine F1 or F3 you will lose these functions.

Although quite a few steps are involved, being able to define MS-Dos function keys is extremely useful. After you have done it a few times you will be able to create a definition very quickly. If you use Basic you could even write a program that asked you what key you wanted to define, and then created the PFK file for you.

ACU



SEEK AND YE SHALL FIND...

Into adventures with Bill Brock

Office bound

At long last The Fourth Protocol: The Game has been released for Amstrad computers. Icon driven, it needs only the occasional name or number to be typed in full.

The storyline, loosely based on Frederick Forsyth's bestseller of the same name, involves a Russian plot to undermine the West by exploding a nuclear bomb and blaming the Americans. The subsequent political upheaval, forcing the election of a hard left government, will lead to our withdrawal from NATO and the establishment of a totalitarian state in the UK.

The game is divided into three parts, each an independent program which has to be solved before the next may be attempted. You play John Preston, an MI5 investigator, who on June 1 has been made head of Section CI(A).

The first game is The NATO Documents. Some secret documents turn up among the haul from a robbery somewhere in England. Security services are notified and you have to find out who is leaking secrets, to whom and why. The answers you get will lead to the uncovering of the Russian plot.

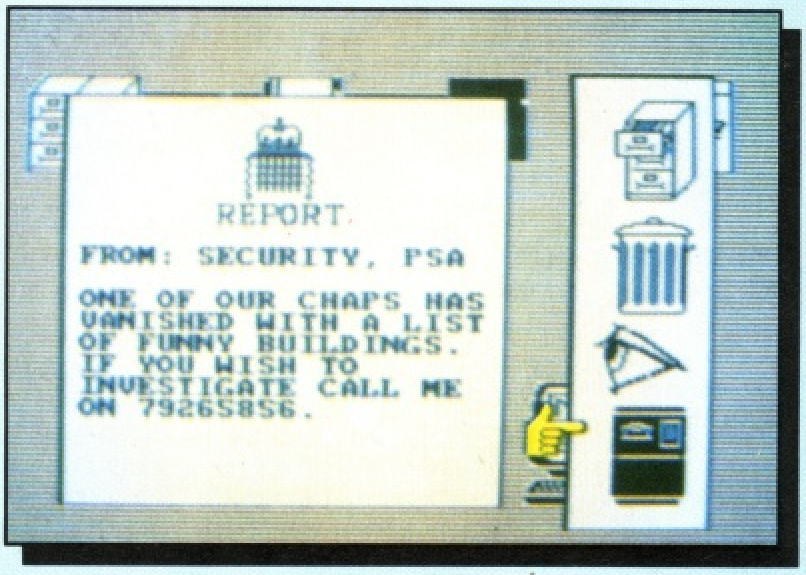
For this investigation, you need not leave your office. You have access to the unit's central computer (Cencom) and will receive reports from various sources. These you must evaluate and act upon. Apart from computer files to which you have access, your principle means of getting information is your network of agents.

You have fifty operatives who may be targeted on people you consider may lead you towards a solution to the many problems that surround you.

The screen display consists of a number of pictures (icons) and a moveable cursor (a pointing hand). Position the cursor with the left and right arrow keys and press Enter to activate any particular action. This in turn produces a sub-menu to choose further options from.

The main menu options are as follows:

- Surveillance: Assigns watchers to and from suspects.
- Cencom Filing System: Holds files created by the player, together with some of its own – you must find out what these are.
- Telephone: Rings for an incoming call, calls out may be made but you have to know what number to dial.
- Information: Three computer terminals display Memos, Reports and Situation Reports from your agents.



A message for John Preston in The Fourth Protocol

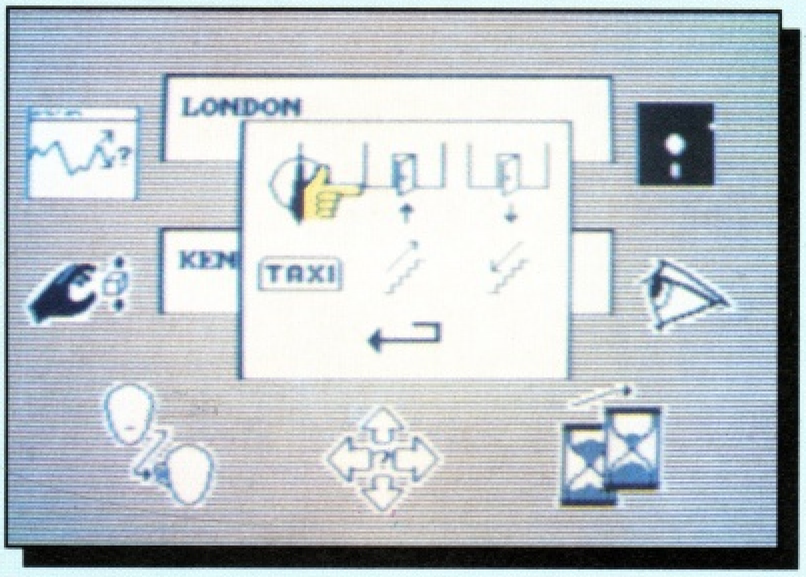
- Calendar: Updates throughout the game, 75 seconds roughly equals one day. You may advance the date if required.
- Assessment: Indicates your progress and prestige within MI5. If this drops too low, you will lose agents.
- Utilities: Allow you to save, load or freeze your game position.

When you are given any data you must decide what action to take, whether to assign watchers or perhaps delve into the Cencom for more information. Not everything reported or that you do is relevant to the main problem, but some action must be taken or your assessment will drop too low for you to be effective.

You should not expect to solve any game worth its salt at the first sitting, or even the second or third. What you should expect is a growing awareness of the right approach. This is particularly true here, with over a dozen sub-plots that – although not directly leading you to knowledge of the bomb – do create a desperate feeling of tension.

Memos or reports will mention places and people and you will need to remember these names in order to assign agents. Help is at hand in the form of Cencom. Not only can you read its existing files but you can also save any incoming reports or memos with your own file names.

Among other things you will be asked to check the security of Building 17. You will be given a map of the building and must decide where security locks are to be



The choice is yours in The Fourth Protocol

fitted. Do not ignore the requests or you will be plagued by memo after memo! Correct action here is unlikely to help you with the major task but failure will affect your prestige.

Once you have read the telephone numbers in Cencom you also have access to the main security computer at Blenheim. Of course, you have to find out the names of people or places before you can call up the files to hunt for possible clues to follow up.

The pressure mounts. You have until July 11 and the frustrating feeling that red-tape is bogging down vital investigation overcomes you. You may be sitting behind a desk but what an exciting desk.

Having made your deductions and double checked your files, you report your suspisions to your superiors. Get it right and you get the password to the next section. Wrong, and you may as well start again.

The second section, The Bomb, also uses icons and more closely resembles the classic format for adventure games. LOOK, MOVE, EXAMINE, PICK UP, DROP and INVENTORY are all there but with the simplified icon system you do not have to think of how to use an object. Simply activate the icon for USE and the program presumes the correct one, assuming of course that its use is significant at that location.

MOVE icons cover not only the usual four cardinal points but also stairs and doors and even enable you to hail a taxi. Telephones may be used and you should also TALK to anyone present.

You know that a nuclear device has been smuggled into the country. For this part of the game, you have to find where it is hidden – fast. There are well over 100 locations for you to visit and no agents to help you this time.

Learning how to travel around can take some time. Taxis are plentiful – just hail one again if not successful the first time. Drivers will ask for your destination but do not always seem to understand what you say, perhaps the strain is getting to you. Beware of using up your money too soon though – the London Underground is cheaper than taxis.

The first section will give you an idea of where to visit and more clues will appear as you proceed. Start by examining everything and pick up items that you may need. Not all of these are in the building you start in, so you must visit other Ministry buildings in the vicinity. Consult your notes from the first part for starters. Having found the bomb you will be given a password to allow access to the next part.

The third episode is The SAS Assault. You have found the building where the bomb is hidden and the SAS have been called in. Your job is to find and disarm the bomb using the information you have gleaned in the first two parts.

Again icons and menus provide you with the means to explore. This time there are only three options: MOVE, USE and LOOK. The rest of the screen is taken up with a plan of the building which you must explore to find the bomb. Needless to say there are many traps between you and it.

The arsenal of weapons you will find when you call up INVENTORY is impressive to say the least – and necessary. There are KGB men at almost every step and all of them are very hostile. This section is more a game of attrition. There are relatively few locations so it is a question of finding the right weapon or move for the right situation. Once you get this far you will win through in the end. It is just a case of how long it takes you.

This is not a cheap game but with three separate programs it is not bad value. It may take time to get used to moving that pointing finger to where you want it but a little patience in the early stages will pay dividends later.

The concept of The Fourth Protocol is quite exciting, especially the deskbound first episode. The icon system is clear and unambiguous – try it, you may like it.

Near the knuckle

Leather Goddesses of Phobus, Infocom's latest (now distributed by Activision) calls itself "a racy space-age spoof" and uses sex as both an advertising gimmick and a come-on to play the game further. You have the option of playing in three different modes: Tame, Suggestive or Lewd, but none of these detract from the normal high standards of adventure game that have become Infocom's trademark.

And, I hasten to add, none of these modes are likely to offend many players.It does become almost explicit on one or two occasions but more in the mind of the player than on the screen.

The basic plot is that you have been kidnapped by the abominable Leather Goddesses of Phobus (we would spell it Phoebus but we must make allowances for our American cousins). They hope to carry out some pretty nasty experiments on your person, hoping to learn something to human disadvantage before invading Earth and changing it into some sort of weird pleasure park.

You find your cell unlocked and escape with another inmate, who has the slightly insane delusion that you can defeat the Goddesses with a Heath Robinson invention made out of cotton balls, a white mouse, a Ford headlight and various other unlikely bits amd pieces.

From then on, your quest is to find all the items on this bizarre shopping list. A means of escape from the Goddesses' hospital (?) is provided by a teleportation system linked by a series of black circles. These are painted (using a special paint) at several critical locations. Standing on them will transport you and your



companion to several points in the solar system.

Whatever some may say about the innuendo underlying the game it certainly comes up to scratch as far as adventures go. There are a number of puzzles that seem obvious on the surface but just when you think that you've got the answer – you are in for a surprise.

You find a frog with a small golden crown. To change it into its former beautiful self you just have to kiss it. That's the answer, but kissing is not all that easy as the frog's appearance is vile, it smells terrible, it croaks at the wrong time and its lips are all slimy and horrible.

Unlikely situations abound. There is an "escape out of the window puzzle" that calls for that sheet on the bed to be used as a rope – no hope, think again. And imagine a mad scientist exchanging your mind with a gorilla's just to prove that the sex urge is in the mind and not the body. How do you escape from its cage – and with the rubber hose that you need?

On Mars you can travel along the canals by barge, once you have learned which button to push when. Once again the zanyhumour bubbles out of this game. How about the Donald Dock or the Whatts Upp Dock or the My Kind Of Dock? The last leads you to a palace where the Ruler sets you a riddle. Not solving it brings instant death, solve it and you just may get the choice of the palace harem.

And so it goes on. Infocom has given a rating as STANDARD, so look out for many hours of fun and games – and there's always the hope that all that innuendo may come true! Certainly the transformation of the royal frog raises the blood pressure – for a moment or two anyway.

You may have noticed that so far I have not referred to any explicit sex. There, you see, its all in the mind! I meant of the player, the Companion, the Frog and the Ruler of the harem.

The initial scene is a sleazy bar in downtown Sandusky, Ohio. You have drunk too much and need the toilet rather urgently. Your choice of Ladies or Gents determines your sex and that of all the other major characters. Guess who went through the wrong door on his first game? *(I did too – Ed.)*

Leather Goddesses of Phobus runs under CP/M and is only available on disc. It is like all Infocom games – not cheap. For all that it is good fun and well worth a place on any adventurer's shelf. As with other games from the same source, it accesses the disc at every avaiable opportunity which means that it occasionally seems infernally slow to play.

The trick here is to link together as many commands as possible and also to learn the shortest input that will be understood – PRESS ORANGE THEN PRESS PURPLE THEN OUT THEN, N, E and so on. Bear with it, it is worth the wait.

Born again classic

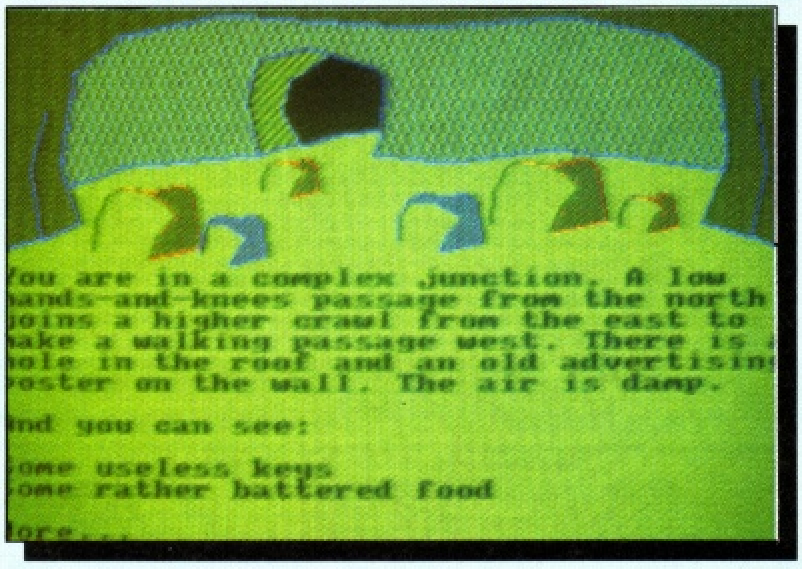
You have often been told that *the* classic adventure is Colossal Caves from the seventies, written by Messrs Crowther and Woods. There are a number of variations, some better than others. Now we have yet another version, this time from the fertile minds of St Brides and distributed by CRL.

The Very Big Cave Adventure is definitely, decidedly, deviously different!

Your guide and mentor in and around the caves is that debased, delicious schoolgirl Trixie Trinian, beautifully attired as always in boater, blue gymslip and black stockings. And judging by the mud around, her wellies too! For anyone who has played one of the serious versions – forget it and get this one.

It is written using The Quill from Gilsoft and shows just what sort of professional product this adventure writing utility can create. The graphics are good, appear quickly and the descriptions are full and highly amusing. It is quite recognizable as a Colossal Caves derivation but the game is full of minor alterations that make it a joy to play.

For those that have enjoyed these caves before there are many surprises in store. Trixie and her friends have been there before you and have altered many of the



On your knees in The Very Big Cave Adventure



puzzles – rotten devils. There are some of the original treasures but you will also find such gems as a Chippendale table, a nail file and the odd bomb.

For those new to the Caves, just lean back and enjoy a zany treasure hunt with an amusing guide. The game is well conceived and has the latest add-ons from Gilsoft, most useful being RAM SAVE. This is very rapid and will save using up too much of your lamp's fuel while you are trying to sort out how to catch that dratted bird.

Because of its size the game is played in two parts, but you must SAVE your position to either tape or disc before leaving the first part. This ensures that you have all the treasure and any vital objects you need to carry through to the second part. You should end up with over £130,000. The second part has strong overtones of Alice in Wonderland, complete with tardy, chattering rabbit . . .

Throughout, look out for words that have a double meaning. Where a word may be understood in more than one way, expect the least likely interpretation. Vocabulary is not extensive and the program does not understand complex input commands. For all that, there is a feeling of depth to the game, with plenty of items to examine and a good range of responses.

One of the magic words from the original cave adventures was PLUGH, transporting you from one location to another. Type this here and you will get a plug for St Brides next game. I can hardly wait!

Help league

Many of you have responded to my call for people willing to help others. Thank you all. Hopefully some time we will have space to name a few of you. We can now offer a help line that covers many different games.

If you are in real difficulties – write to Bill Brock, care of *ACU* and the League will do its best. If you have solved several games and are prepared to help others, write in and join the Adventure Help League – a dedicated band of adventure addicts.

ACU

From Page 41

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WANTED!

Answers to Ariolasoft's recently launched game They Stole a Million competition



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The 25 slower off the mark will each receive a T-shirt.

Rip off here

Questions

There have been some infamous robber partnerships in fiction and reality. All you have to do to win is:

1. Match the partners in crime listed below.

a) Bonnie	The Sundance Kid
b) Black Bess	Robin Hood
c) The Band of Merry Men	Clyde
d) Jones	Dick Turpin
e) Butch Cassidy	Smith

2. Which actors/actresses played the title roles in film a) and e)?

Rules:

1. Sender of the first correct entry drawn on December 22, 1986 will receive a Goody Bag. The 25 runners up will each receive a T-shirt.
2. You may photocopy the form but only one entry is allowed per reader.
3. The judge's decision is final. No employees of *ACU* may enter.

"THEY STOLE A MILLION" ENTRY FORM

Answers

1. a) ....

b) ....

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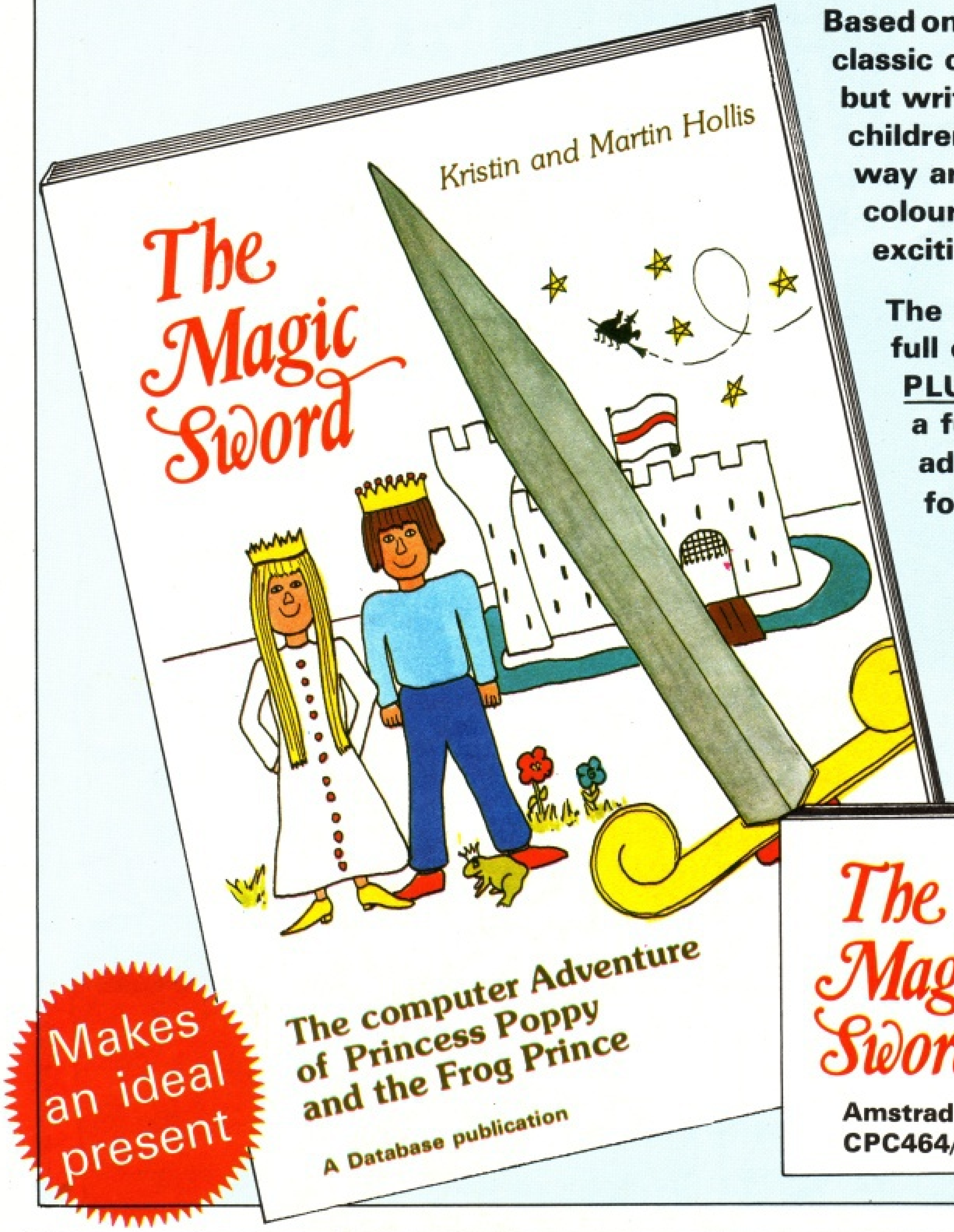
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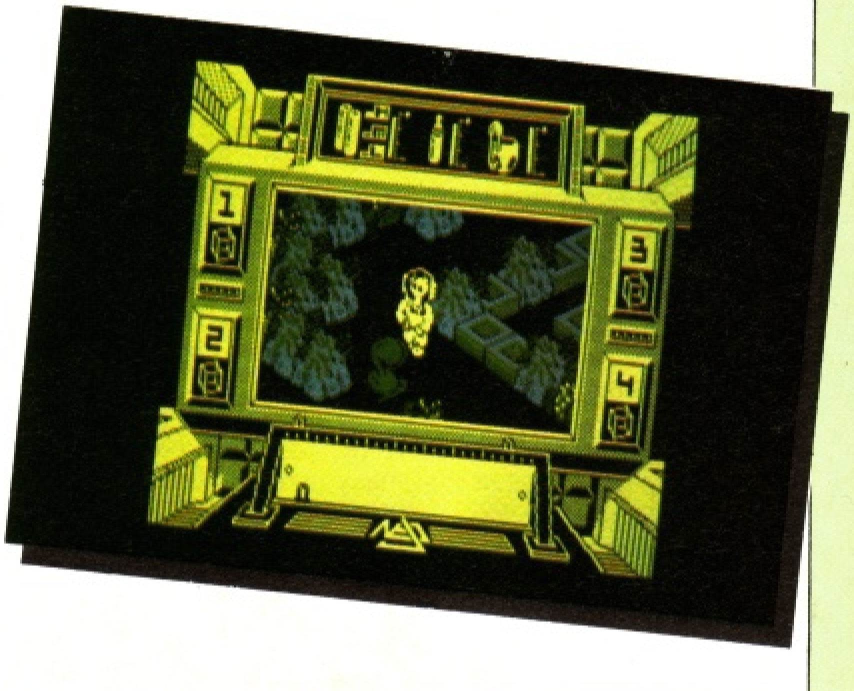
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ACU12

PRODIGY



Imagine (sorry) an isometric version of Jack the Nipper, set in a world far, far away where machines spend their t-states trying to create organic life. This is the background to Electric Dream's new release – Prodigy. The story runs thus:

The Machine Sorcerer Wardlock has been experimenting in his Mechlabs, and created organic life. Until now Mechworld has been the sole province of things that go clunk, and things that squish have been unknown. Wardlock's changed all that. His first experiments just produced Globewels and Bloberites, strange shaped creatures that he allows to wander the Mechlabs at random. Then came Solo the Syntleman, sentinent and humanoid. He's a synthetic man, and up 'til now has spent his time wondering how to escape the nightmarish laboratories.

The arrival of Nejo, a human baby (presumably from under a goosedroid bush) spurs him into action. Nejo needs almost constant attention, nappies to change, and feeding. The Bloberites and Globewels take an altogether unhealthy interest in the brat, and he needs protection. This is obviously no place to bring up a young spacer, so Solo tries to go over the wall.

Mechlabs are divided into four zones: Ice, Fire, Tech and Vegie. The inhabitants of the latter are called Vegie burghers, I suppose. Travel between zones is by teleport, which works only slightly better than BR on an off day (Mondays through Sundays). Ice Zone contains oxygen bubbles, from which Solo can replenish his air supply. He can tell when he needs to do this from his suit display, which also tells him how much milk Nejo's got and when he (Nejo, not Solo) needs a shower.

Milk can be had from Chef MechDonald (another burgher) by threatening him/her/it with the Bubblegun which Solo has. This is also his only defence against the failed experiments mentioned above. To be an experiment is one thing, but a failed experiment . . . No wonder they're angry.

The plan of action seems simple enough. Lying around the labs are four Power Keys, one per zone, which have to be fitted into the Lockfire. The security computers can also be befuddled by fiddling with the terminals which can be found here and there. Helpful hints are suggested by the teletype in Solo's suit, which also dispenses timely warnings about imminent catastrophes.

And so Solo the Syntleman sets forth to bravely zap what no syntleman has zapped before. The assorted monsters both hinder him, sap his strength and send him back to his starting point. Najo trys to follow him, but can't travel as fast as Solo and is more vunerable. Solo can either slow down his search and allow the baby to accompany him, or dump the infant somewhere safe and make haste. But he must always leave enough time to get Najo to a shower or milk when the need arises.

The graphics are the traditional 3D maze set inside a border containing information about the game in progress. Green screeners will be pleased to see a feature for their phosphor. There's some unusual intro music which is quite atmospheric in a tuneless sort of way. In all, quite intriguing.

Author: Electric Dreams
Price: £9.99 tape, £14.99 disc

Nigel

All this man looking after a baby seems a bit pretentious to me. Prodigy is simply a roam around a maze game. It is very difficult, but with practice grows on you. To get the most out of Prodigy you need a fair bit of patience and persistence.

As a feat of programming the game is impressive, it has a huge map and a massive array of monsters. A lot of work has gone into the Mode 1 graphics but the game is not one of Electric Dreams best.

14/20

Liz

A large decorative border is described as a feature of the game. What it really hides is a programming short cut. Scrolling 16k of screen with animated figures and keeping track of off-screen aliens (not to mention looking after a baby) is just too much for Mr Z80 to cope with.

It works well and the proggy succeeds in keeping a lot of balls in the air at one time. Not a particularly special game but something to while away the hours.

15/20

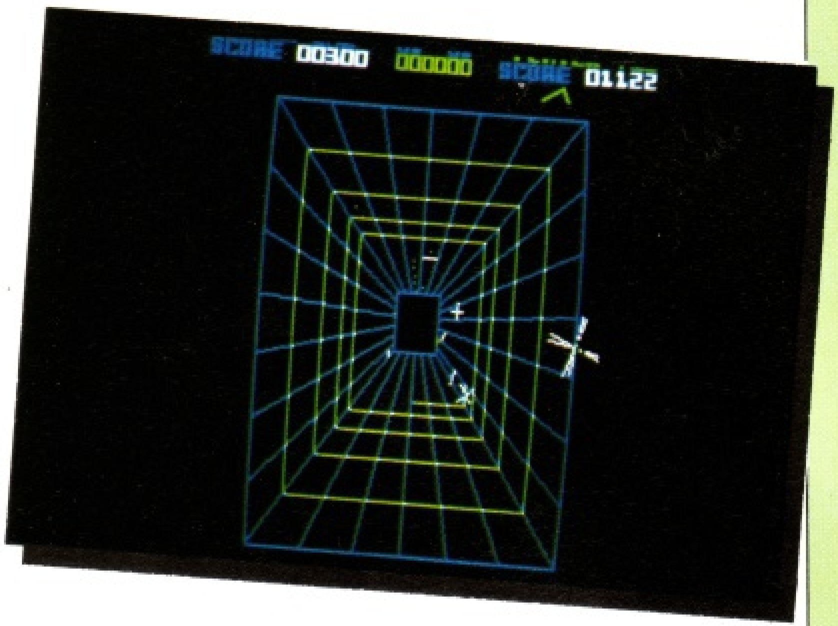
Colin

What's this? Androids running away from mad inventions, with a baby in tow? Sounds quite original. So it's a shame that it's nearly just another 2.5D hunt-the-key maze game. The twist is this nicely animated baby that crawls after you and generally gets underfoot. Makes things more difficult, true, but disproportionately more frustrating, especially with the turgid joystick response.

Graphics multicoloured and nice, playing area small, action awkward. I might have enjoyed it if I could have played it . . .

10/20

TEMPEST



The Tempest is one of Bill Shakespeare's naffer plays. It's also one of Atari's better arcade games from the golden days of Defender.

Possibly a classic, definitely a cult, it kept the author for one bereft of 10 pence pieces and away from the bar. Of course, at home you don't waste 10ps and there's no bar (shame), but does it still have the Right Stuff?

Let's describe the game first. It's a bit like Space Invaders played down the insides of a crumpled cardboard box. Instead of the evil aliens (perhaps they're just lonely) marching down the screen to meet you, they advance up the sides of a long tube made from a set of lines receding into the far distance.

This tube, by the way, is a Hyperspacial Wireway, through which the good folks of the galaxy normally traverse. At the top you have your laser base or Zapper, which you guide around the circumference to pick off the oncoming nasties, the better to make the Wireways. According to the script, this Zapper is a remotely controlled pulsed plasma device mounted on two mechletric legs.

According to the screen, it's two green lines. But use your imagination.

And these nasties are numerous. There are Flippers (which look nothing like dolphins) which laconically head-over-heel in a spiral up the tube. Fuseballs whoosh at speed straight up to your end of the tunnel. Pulsars are hyperspacial vandals – you can't cross a line with a Pulsar hanging on it.

If hit Tankers split into two Flippers, or a spiralling Fuseball. And then there's Spike, who whistles up the side looking for all the world (take you pick which one) like a single line.

In case this xenobiological hoard proves a little too much for you, you have up your spaceman's sleeve a Super-Zapper, which kills 99 percent of all known knasties. You've only got one of those every screen, so save them for when you really need them.

You really need them if something gets to the top of the tube. You can't shoot it then, you can't pass it and if it's moving, you're in trouble. The ol' Super-Zapper is just the answer.

The vital weapon in the conflict is you. Success depends completely on how fast you can spot the advancing hoards, how quickly you can flit from side to side, how well you can judge the order in which to mash the monsters to prevent them reaching home base. It's quite a task.

Once a tube is de-infested you are warped (especially if you read this) at unimagineable speeds to the next wireway in need of clearance. And so it continues, only faster, fiddlier and frantic-er.

This interstellar Rentakil is depicted in wireframe graphics. The original arcade version was vector scanned (like Asteroids), and the Amstrad version does it's best to look identical, even down to the rotating letters and flexing messages. It sounds identical too, even with the torpid Handel churning away on attract mode.

If you've ever played Tempest, then be assured that this is purty close to the real thing. If you haven't, but appreciate some above-average zapping, then check this out. Even William might have enjoyed it.

Author: Electric Dreams
Price: £9.95

Nigel

Tempest is a good game but as Liz kept reminding us it is not the same good game. There is no menu or starting sheet at the beginning. You don't fly down the tubes at the end of a sheet and worst of all you can't fire sideways. I kept on letting off my super zapper too early. Still I found it a good blast.

The more I played Tempest the more I liked it. Perhaps I expected too much before I started.

8/20

Liz

This conjures up memories of my evening class, learning Pascal. The course was enough to put you off structured languages for life – the best thing about it was the Tempest in the bar at the Poly.

It's surprising how good you can get on an eleven week course (at Tempest, not Pascal). It also shows how often micro versions of arcade games are a pale imitation of the real thing.

Arcade Tempest was fast and furious, this is fudged and fiddly. Nothing like the same game.

12/20

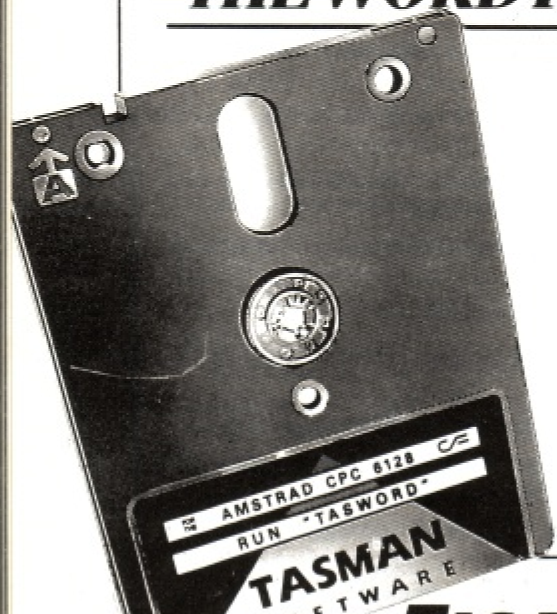
Colin

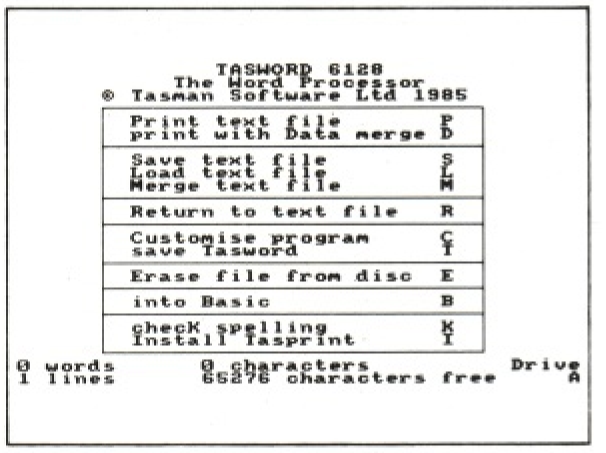
Wrists in good nick? Joystick wrought from solid vanadium? Don't need to sleep in the next week or so? Good. Then get hold of Tempest. This is about as close to the arcade megagame as you'll get on any computer. It's not Electric Dreams' fault, but a joystick isn't as good as a trakball and it's too easy to release the Super-Zapper by mistake by pulling down on the stick. Nevertheless, it's a goodie, if you like that sort of thing.

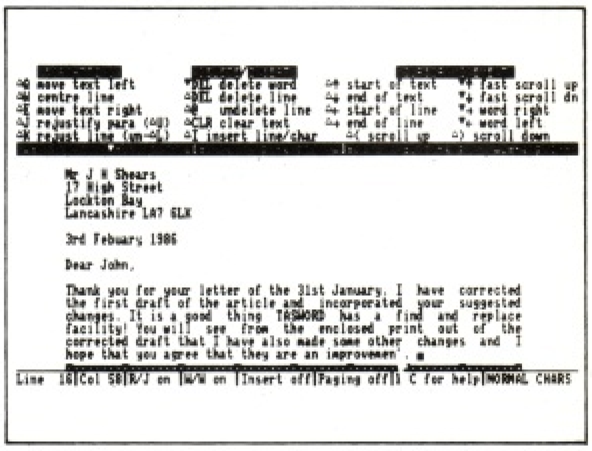
17/20

TASWORD 6128

THE WORD PROCESSOR FOR THE AMSTRAD CPC 6128







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POPULAR COMPUTING WEEKLY, NOVEMBER 1984

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CERBERUS



Hello there. Mind if I join you? What're you having, Syrian Panther Sweat? A wise choice. One of the few bars on this godforsaken planet that serves a decent drink. What? Oh, I'm just off the Cerberus. Ah, you've heard of it. Quite a history. Quite a ship. No, I wasn't on it in those days. All that crew are rotting away on Dracona or, if they were very lucky, they're so much glowing plasma.

You know the story, I suppose. I heard it from a grizzled space rat on Bongaigner V who claimed to have been in one of the attacking Starfleet police ships. He could well have been telling the truth – it's a big galaxy and he was an old hand. Only had an old hand as it happened. The other was a cyber-police issue. That's why I almost believed him.

Don't mind if I do. Ahhh . . . I can feel it doing me harm. So you want the facts about the old Cerberus. The story goes that it was doing the Arcturus – Auriae run when the pirate band got hold of it. Seems she blew a tube and dropped into n-space when Roland's Rascals were happening by. She wasn't armed then, and couldn't fight. Couldn't run, either.

The pirates had that big drydock in those days, some hulk they converted to a repair yard. Two years later, they had made Cerberus one of the fiercest fighting ships in this quadrant. Flagship she was.

What Roland didn't know was that she had been made a trap. Some of Cerberus' crew had joined the pirates, they were StarPol agents.

All those weapons – they were rigged. Time came when Rol came across a crippled, defenceless freighter. He ran towards it, lasers almost melting. The rest of his fleet did some melting too. They drifted out of range, and joined the StarPol grouping. Think of it – three hundred ships for one man. They wanted him, and badly.

Rol realised something was wrong when the crippled freighter warped out from under his nose, and those blips came up on the gradar. Of course, he called his fleet – it wasn't there. He was on his own, with the Cerberus and two lasers. The smart bombs were all but useless.

Into the attack came the StarPol 'stellars. They swooped down towards the Cerberus thinking it would be an easy kill. They reckoned without Rol. Time after time they came into the attack. Time after time he repulsed them, wiping them out with just the two lasers. Then the 'pols sent in the meteorites. Rol, he just stood his ground, and blasted them out. No, I didn't think it was possible either, but he did it.

In the hold, his crew was trying to fix the smart bombs. Rol held out long enough, shot enough ships, for them to fix a few more. The battle continued for days, that old rat said. As fast as StarPol poured in the ships, Rol blew them away.

They caught the ship at last of course. No, Rol wasn't on it – he'd ejected Seldon knows where. Rumour has it he's somewhere out on the Rim, teaching some backwater about comptech. And the Cerberus, well they auctioned it off. And now it's back on the trade routes. I must be, too. Oh, okay. Just one more. Now have you heard about Ruh-dehls? Makes this panther sweat taste like . . . Let me tell you . . .

Author: Player
Price: £1.99

Nigel

This can only be an Amstrad game. The great graphics, mega-impressive on an Arnold, wouldn't raise an eyebrow on the Commodore 64 where the weak spriteish movements and the minimal plot would be laughed to scorn.

On a Spectrum the graphics couldn't be done anyway and the action would be derided by anyone who'd ever played Hungry Horace.

So an Amstrad natural. I could forgive a lot for those pretty little pixels, but not this much. Not quite.

14/20

Liz

When this month's games plopped through the letterbox at *ACU* Towers I thought that Cerebus was the good game from Players and the others would be naff.

Although this is reasonable it's not a patch on Guzzler. And if I told you that holding down the keys K.E.V.I.N would make you indestructible it would ruin the game.

So I won't.

12/20

Colin

Players has obviously gone overboard on the graphics. Loverly they are too – subtle shades of colour, explosions that exhilarate and a mother ship that's as detailed as a real arcade game. They must have spent weeks on these graphics. They've spent as much as five minutes – tops – on the gamesplay.

It's worse than Space Invaders, where you at least get more than four enemy vessels on the screen at once. Time and time again you get four (beautiful) ships wandering about the screen. Shoot them before they shoot you.

C'mon guys, it's just like using the Mona Lisa as kleenex.

15/20

IT'S A KNOCKOUT

Perhaps you can remember It's a Knockout. IaK, or Jeux sans Frontieres, was a medium popular TV programme in the mid-70s, where various teams from various European countries took part in farcical competitions. A bit like the Eurovision Song Contest, but intentionally funny.

There were all manner of ribtickling races. In general everyone competed at once on each, but the marathon was just one team at a time. GB used to have a private competition with the Belgians as to who would come last most times – we even lost that one.

If it was on t' telly today it would be a natural for a computer game, Ocean must have thought. Ah well, if they can have WWII simulators then we can have IaK. And here it jolly well is, in the style of Dirty Tonsils Supertaste and other fine Oceanic offerings.

Take your joysticks for the first merry jape. The Flying Flans is born from the best slapstick tradition. Two guys on the other side of a wall take turns in throwing flans at you using a mallet and a seesaw.

You're carrying a tray on which to catch the catapulted custard and once the quiche is quaught you have to dump it to one side. If you miss any – and you will – the floor underfoot becomes awash with albumen. Ever tried running on flans?

Once you've wiped down your messy metatarsals after that little delight, have a go at Harlem Hoppers. Spherical objects are rolled down a camel's back towards you, and they have to be caught.

Just in case that's too simple, you're attached at the waist to a large elastic band which pulls you backwards. And once again, the floor is slippery. Something to do with the camel perhaps.

And then, appropriately for Ocean, there's the Titanic Drop (take it as you will, guys . . .). This exciting compo involves sliding down a rope from the ill-starred liner into one of four lifebelts. They're colour-coded as to their pointworthyness.

Feeling chicken yet? Good. Now try the Diet of Worms. No longer the funniest date in history, you guide a fowl around a field. On this lie a number of worms and you have to get as many as possible into a tray at the bottom of the screen.

Nigel

It's a Cop Out is an attempt to take a bunch of very naff games which would get laughed out of the worst budget range and compile them with a famous name. Once you've got a name the buyers in the big stores look no further. Boy are they fickle.

Liz

Hehehe, haw, haw, haw, This heeeeeeeeeee, game fro... hohoho from oooh, Ocean is as irksome as the commentary in the real thing. It thinks it is funny and is similarly wrong.

If you think that a girl from Huddersfield dressed up

Colin

Here's a blast from the past. Continental cavortings, yet. I played it through once, and I don't think I'll do it again.

But it could be one of that rare breed, the computer party game. The animations are OK (how many times have I said that...), and the humour excites a few titters, but the novelty soon wears off. Most of the games go on



Penultimately (Penoceanicly?) there's the Obstacle Race. A firm favourite with IaK of old, you race down a track attempting to miss various obstacles. You mean you guessed from the title? The computer races an opponent against you – keep up with him to keep in the points.

The Marathon is the Bronte Bash. This scales the wuthering heights of freaky funambulation. Armed with a crane, your mission is to drop a heavy weight on to the bonce of various dinosaurs that pop out of holes in front of you. No wonder they became extinct – there wasn't any paracetemol in those days.

Up to six players can battle it out at once – any unfilled places are taken by the computer, which merely announces the scores. After each race, the contestants are awarded from one to six points according to where they came in the grander scheme of things.

Does Britain still come last? Is it still a tossup between the deft Dutch and the grim Germans for first place. Only you can tell . . .

Author: Ocean
Price: £8.95

The Mode 0 graphics are the worst I've seen in quite a while with no attempt at shading. The animation is average and the games all boring. I've seen it all before and didn't enjoy it then.

6/20

as a rubber penguin with six foot flippers is amusing then you might also think that waggling a joystick a million times while trying to avoid chunky beachball sprites is a seventh heaven. I don't.

7/20

far too long, and in the obstacle race I put the joystick down in ennui well before the denoument.

Perhaps it needs more players, but the computer printing up the scores at the end of each bout is done with all the panache of a fishmonger filleting his fiftieth flounder on a Friday. Now what it needs is a digitised Eddie Waring going over the top.

13/20

QUESTOR



Cascade is perhaps most famous for its 50 Games cassette, which has been around now since ZX81 days. Now seems a funny time to branch out, but here's the first game I know of from the company that's destined to stand or fall on its own two feet. Or shag pile, as the hero of the piece rides about on an airborne Axminster.

The intrepid turk is on a mission of mercy to rescue the daughter of the Nawab from deep within the Catacombs of Garr wherein she lies imprisoned . . . And guess what he needs to effect the escape. My goodness, how did you get it. A key. And not just any key (because they are multitudinous) but the Giant Key. Freud, eat your superid out.

These keys, it is almost redundant to say, lie hidden within the mazey Catacombs of Garr where lesser mortals have long feared to tread.

So what makes you so special? You alone, chuck, have The Power which enables entry, ensures expertise and generally helps you in the quest. It runs out though, especially if you come into contact with . . . You're ahead of me again. Yes, monsters, nasties, bats, ghouls, snakes, skeletons and Things That Defy Description. So there's no point in describing them.

But there are friendlier things distributed around the place with gay abandon to aid you. Lucky old you. The trick in is to transport the right tool to the right place to remove yet another barrier between you and the Nawab's daughter.

There's also the occasional clue in case your Power doesn't crank your cranium into intellectual overdrive. Clues flash. So if, for example, that evil, leering basilisk has a flashing goblet just the other side of him/her/it you might be able to tie in that rather natty golden grail you passed just a cavern or two back. That's it, the grail blasts the basilisk. Not going too fast for you, am I? Good.

Your threadbare transport can carry a mere three objects at a time so try to remember where this, that or indeed the other was. Always remember – you are all that stands between Garr and the total domination for which he craves. It's a good idea to start out with the Magic Pearls – they're especially good at removing those stubborn, ground-in evil minions.

And when you finally battle through the catacombs there's the Guard and Garr himself to ultimately (them again) dispose of. So be sure that your loins are girded for the battle.

On screen you see the portion of the maze you're in at the moment (making a map might be a good idea), yourself, your carpet's contents and the bouncing bogies currently in your airspace. All in Mode 0 Gnomechrome.

The maze itself is satsifyingly sized. There's the chance to get a quick zap in now and again (with the magic dust). So for those without a maze game to their name, cast a carpet over Questor.

Author: Cascade
Price: £8.95 (tape), £13.95 (disc)

Nigel

"Yawn bore, seen it before. Still I'd better play it for a bit. Now what happens if I get that cross over here? Ah and that opens this now if I can avoid that spidery thing. Ahhg it got me."

Questor is oddly addictive. It may be just another Sorcery clone but then look how good the original was. Besides there's nothing wrong with a good clone – ask Alan Sugar. Yup, a jolly prog worth a quick go.

15/20

Liz

Flying carpets, rescuing princesses – this is the stuff tales should be made of. Flicker free sprites and lots of palette switching. Cascade may not be offering a free watch with this one (as it does with the 50 games compilation) but it still represents pretty decent VFM.

16/20

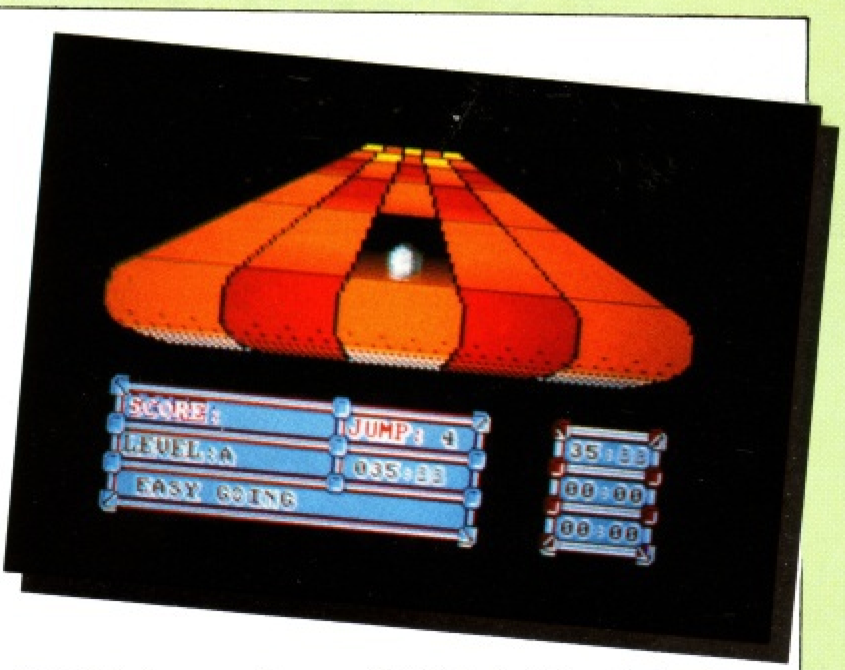
Colin

There comes a time in every reviewer's life when it all gets too much. I've got no doubt that this is a very competent explore-the-maze game, but I've seen an awful lot of competent maze games. There's been a lot of water under the bridge since Jet Set Willy, but to look at this you wouldn't know it.

Still, don't let me put you off. If this is your first maze game, you'll love it. If it's your second, it'll be OK. Otherwise, spend your shekels on a packet of Polos. They'll last longer.

8/20

TRAILBLAZER



Ever wanted to be a footballer for Astral Villa? Well, with Trailblazer your wildest surreality can come true. A simple concept really, and not entirely original. Take a bouncing football and a multi-surfaced grid stretching into the far distance, and avoid the holes. Having described the game in 44 of the allocated 500 words, I suppose I should fill in the details a bit.

To the accompaniement of a twee little tune which you only really notice when it's driven you completely bonkers, you have to guide the progress of this football down a grid. This is composed of squares and holes – hit a hole and plummet through the nether reaches of uncharted space. No "Can I have my ball back please mister?" here.

Even where the grid is solid the texture and surface substance varies. Some colours are sticky, some extra-bouncy, some various shades of speed.

As the idea is to whizz down this grid as fast as possible while maintaining the control needed to miss the voids you have to be able to predict the effect of those patches on your ball's ballistics. It's uncannily like driving a motorbike on an uneven road with oil patches . . .

Control is by joystick (recommended) or keyboard. Pushing the stick forwards accelerates progress and left and right move the ball in those selfsame directions. Fire imparts that extra bounce needed to hop over holes.

There are major discontinuities lying in wait. To cross these a seriously precise stab on the fire button or spacebar is needed. As the game progresses, the ratio of space to surface gets greater.

And then the islands of something floating in nothingness start to get staggered, so bouncing sideways is called for. Look, nobody said it would be easy. And of course there's always those sticky patches to look for.

There are 14 distinct stretches with names like Shriggle's Shriggle and Hacker's Evil Hole. To get past each one you have to learn their little niceties like the back of your hand. By the way, would anyone actually recognise the back of their hand in a manual identity parade? Just a thought . . .

Gremlin has a high regard for your sanity (gibber), so a practice mode is thoughtfully provided where you can try any three bits (or even the same bit thrice) without losing lives.

So it's possible to sample the delights of the utterly, completely, massively impossible bits without having to conquer the merely excruciating parts.

And that's without mentioning the really depraved depths those guys from north of Watford can sink to. Like switching joystick directions on the fly. Or plonking an incongruously easy bit in to lull the senses and hide the yawning chasm that lurks just over the horizon.

Presentation is of a singularly high standard. You can even detect the same hands at work that created Jack the Nipper at work, despite the completely different type of game.

And then there's the Worlds Longest Scrolling Message. I see no reason to disbelieve this claim. It manages to mention Boots, Frank Bruno, men in white coats and the reason why the Options menu starts at option 3. And it goes on, and on, and on . . .

Speed merchants and seekers after thrills should have a look at this one.

Author: Gremlin Graphics
Price: £9.95

Nigel

The Ed has banned this game from the *ACU* office: When it was running on the 464 no one got any work done. *(So – what's new? – Ed).* Now it is an after hours only job.

This has all the ingredients of a good game. Excellent design, fast action and 100 degree proof addiction. The programmers have packed a lot into this game. In addition to the long and winding road they have a massive message and a super little tune.

This deserves to do well.

18/20

Liz

If you want to compare this game to something (and some people love to do just that) then Trailblazer is a version of Bounder with a centre forward's view of the ball. There is more palette switching going on here than the mind can comfortably cope with.

The action is fast, furious and extremely addictive. I used not to rate Gremlin but it's produced such classics of late that they are shooting up my list of best software houses.

19/20

Colin

"You'll like this one", said the Ed as he pressed another disc into my cynical palm. And I do. It's great. Solid planes of colour, an absolutely maddening game idea, and totally moresome. There are some truly evil twists hidden away. Gremlin Graphics is a fitting moniker indeed. And now if you'll excuse me, I've got a Cul-de-Sac to negotiate.

18/20

GUZZLER



Just when computer users the country over were getting used to the idea of the mouse as a control device, Players employ a rodent as star in a maze game. At least I assume it's a rodent – Greedy Guzzler is never precisely identified.

Our mouse meanders through a maze in search of mouth-watering munchies, usually items of fruit, on which to gorge. It gets strategic too – he has to get keys to unlock the doors behind which the delectable dainties lie.

As any conscientious consumer of calories will confess, over indulgence has its drawbacks. One tends to expand, enlarge, broaden – in short, get fat. This fate befalls our hero too, as after a good guzzle he just cannot squeeze through some of the gaps his previously sylph-like body used to traverse with ease.

This wouldn't matter so much, except that the maze in which Guz tends to the inner mouse is swarming with flocks (herds? shoals?) of Frobblies. You might expect the poor mouse to get the frobblies after eating all that fruit but it's even worse than that.

These evil beings have him on the run, for just one touch and he's had his last supper.

Fortunately (exciting, isn't it?) he has some bombs about his person. A remarkable mouse indeed. Just one blast from Guz's grenades can knock all the Frobble from a Frobblie for at least 10 seconds, during which time the greedy one can make good his escape.

That still leaves the problem of the obesity, for with all that adipose tissue aboard he can't bend down to get a key to get more food. And he's only got three bombs to start with anyway.

This is where Deflator Dennis (honest!), the Dieters Delight (I made that bit up) comes in handy. This tenticular terror wanders round the perimeter of the maze. Should Guz come into contact with him while fat the extra ounces will just melt away, leaving the rodent slim once more and able to go about his digestive doings.

But if the encounter occurs when Guz is thin, then it's just another way for the mouse to meet his maker. See, I told you it got strategic. And that's about the gist of it. Whoops, nearly forgot the last alliterative animal – Bonus Barry.

BO Baz pops up from time to time, bearing a letter from the word Guzzler. The first time he appears, the letter is G, next time it's U, and so on . . . almost as exciting and imaginative as writing for *ACU*.

Should Guz meet Baz, the score (yes, there's even a score) leaps by 2000. If he fries a Frobblie with his bombs there's an extra 1000 in it for him. And guess what happens when a screen is eaten clean of comestibles . . . right. Another one, with a different maze, appears to keep whiskers atwitching.

And the whole thing's set to toetapping ragtime music. Quite delightful.

So, if you're a frustrated psychologist (most of them are) with a yen for behavioural studies who can't afford the kit for mice and mazes, watch 321. On the other paw, you could always give this game a trundle.

Author: Players
Price: £1.99

Nigel

The worst thing about Guzzler is the name, it puts you off before you start. Still the loading screen makes up for that. Roland Rat eat your heart out. This is a game of timing and memory. Maybe after a few weeks I'll tire of this one but most games don't even get the chance.

The music is excellent and the gameplay very well implemented. Nice one, Players.

18/20

Liz

Look this is getting ridiculous. Readers are going to think that I've got a vested interest in Players if I keep giving their programs such good reviews. Guzzler may not have 30 frames a second solid shapes rotating flicker free with millions of other things going on but it is playable. So the game looks for all the world like PacMan. So it is only a budget game. So the sprites are tiny.

So what? It is fun to play, you can learn patterns and have to time things so that you spend as much time thin as possible. Brilliant.

19/20

Colin

Golden Oldie time this month. Tempest, and now PacMouse. One look at those thin blue walls, bumbling sprites and edible blobs and the arcadist from way back when will feel right at home. Only the maze has been changed to protect the innocent (easier to spell than plagiarist). But to be honest, the game's strategy and details are a little different from PacPerson.

It's still a good bet that if you liked PacMan, you'll like this, and if not then you won't. Me, I quite liked that, and I quite like this. P.S. The music's good.

16/20



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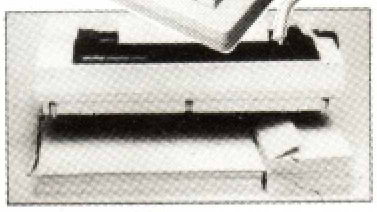


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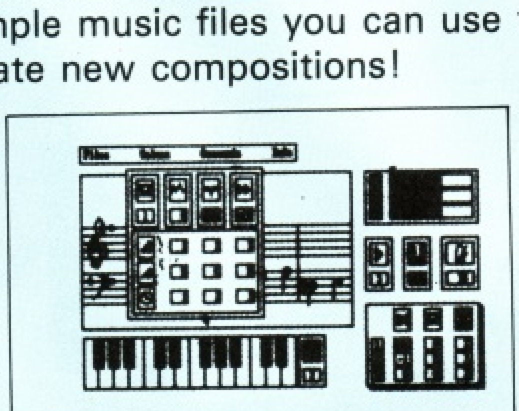


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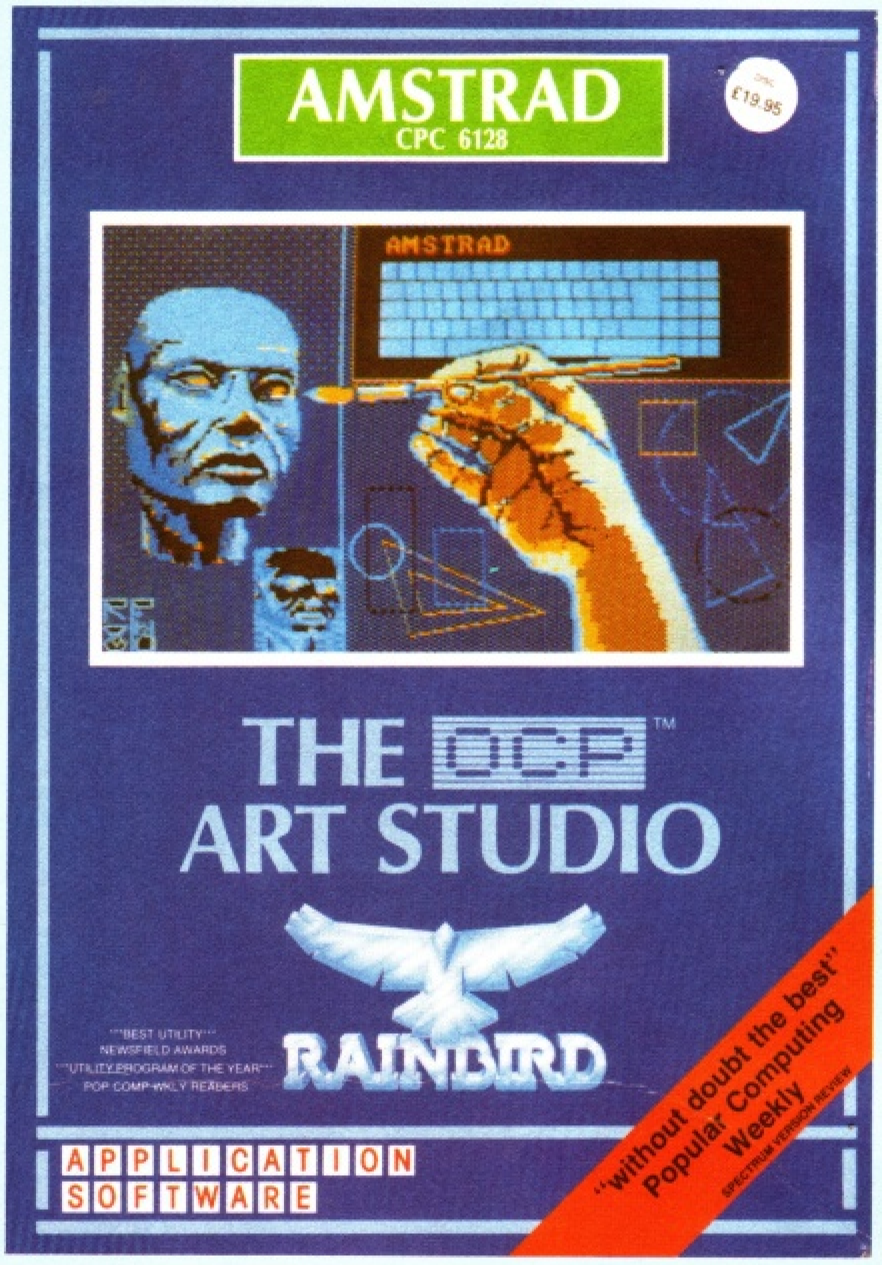
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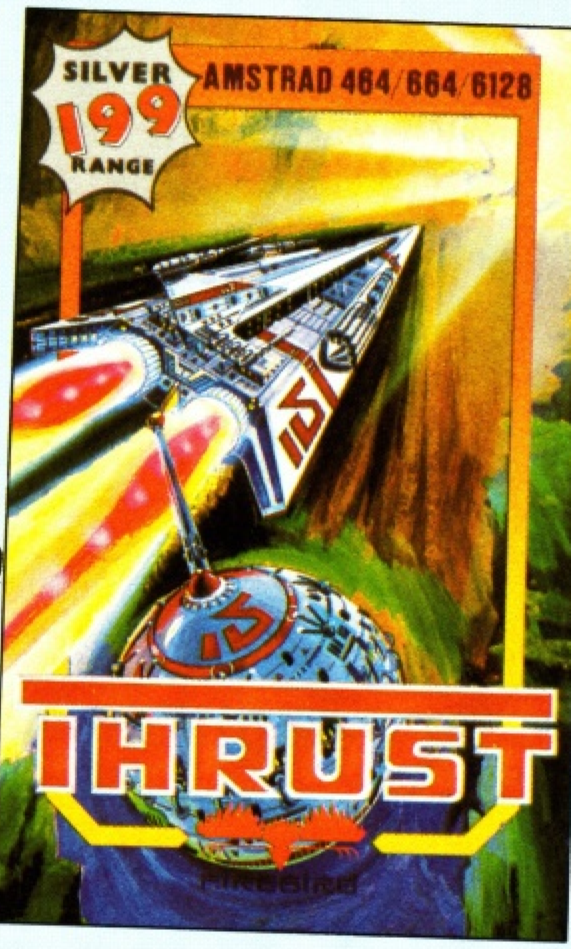
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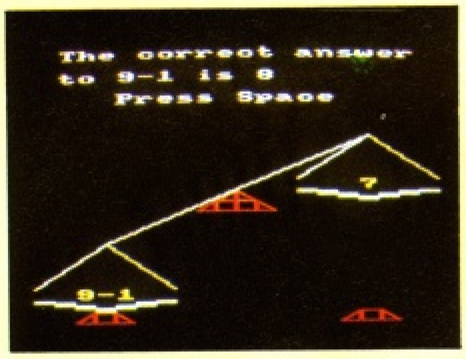
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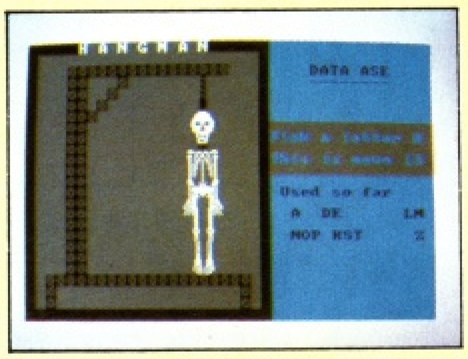
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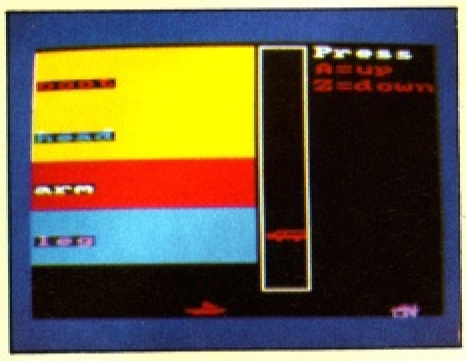
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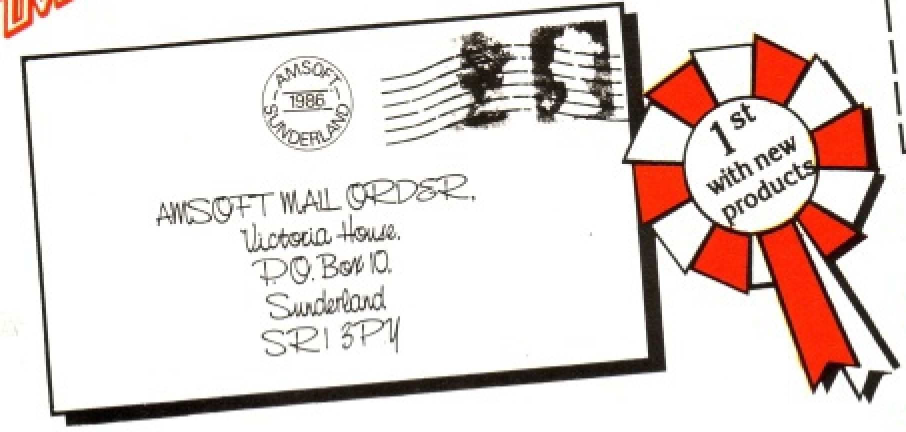
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The Least Significant Bit

Now it can be told: Joyce reads The Guardian. A few weeks ago the Grauniad ran a little piece on Alan Sugar and an interview he did for a business magazine. "If there was a mass market for portable nuclear weapons", the man said, "we'd produce them". It is thus entirely coincidental that the new spelling checker for the PCW 8256 denies all knowledge of the word Amstrad. Instead, it suggests, you must mean Amoral. But then it's never heard of Joyce either. The closest it can come to spelling its own name is Joke. There's a thesis in there for someone.

Careless talkers soon leave the kitchen. Mixed metaphors aside, it's not often that someone opens their mouth, puts their foot in it and burns their fingers. But William Poel, doyen of Computer Trade Weakly, ex of Amsoft and now supremo (it's true) of NewStar, might have cause to reflect on the wise words above. A large proportion of Newtzar's business was done by shifting a word processing package called NewWord. It's a Wordstar workalike, but with a few little extras.

Those in the know generally proclaim it to be superior to the venerable Wordstar, and as it was written by deserters from Micropro, the Wordstar company, this is quite possibly true. William Poel proclaimed this at the top of his voice, and took great delight in doing down WS/Micropro whenever appropriate. Micropro are of course totally above trading insults, and aren't touchy at all. Even when the Voice of the Poel took to laughing raucously about the WS1512 affair, Micropro remained unmoved.

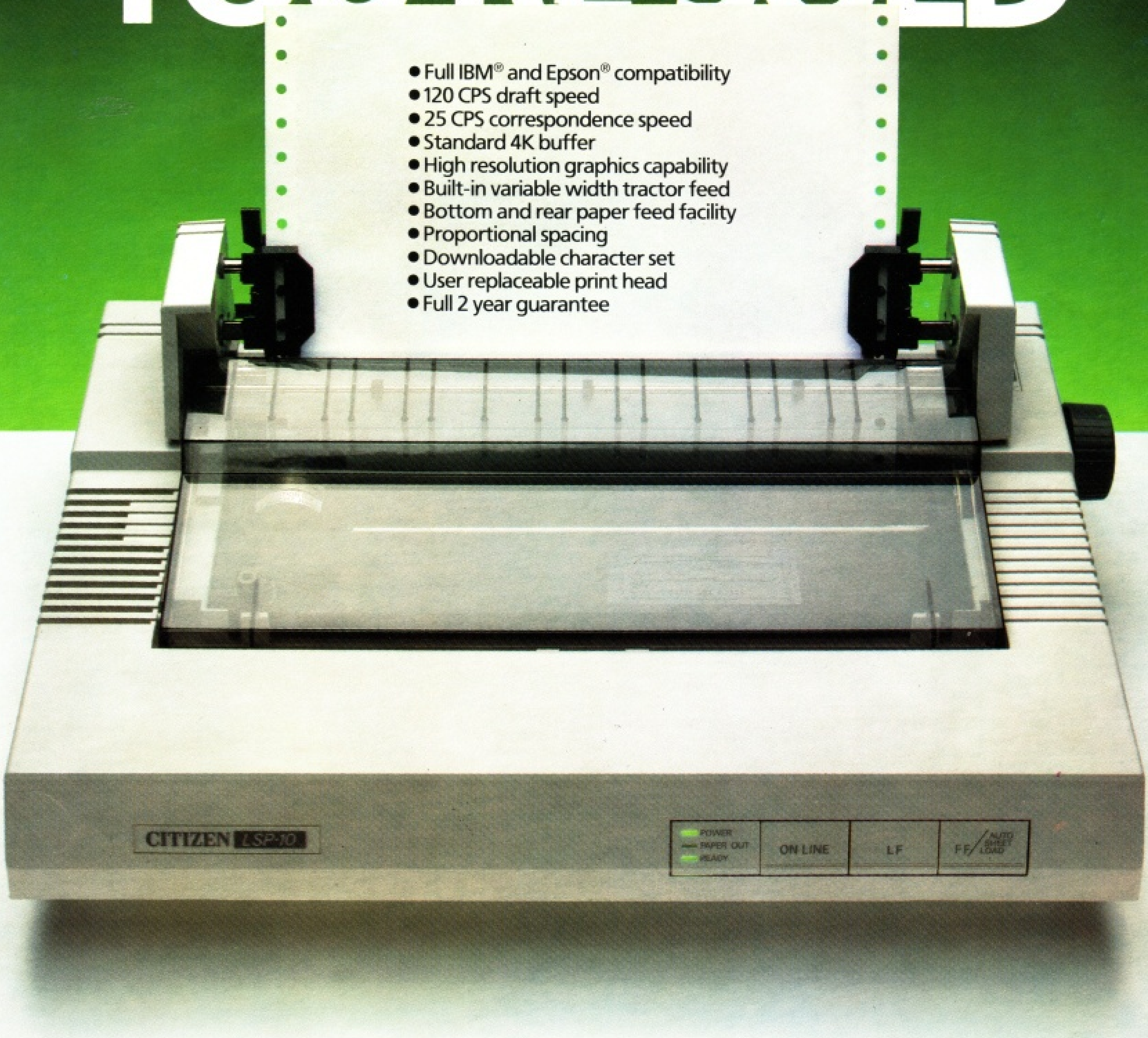
Not so long ago Micropro bought the rights to NewWord and took over the distribution. To nearly everyone. So if any programmer out there's got a nifty word processor they want to sell, they could do worse than try 200 North Service Road, Brentwood.

Once upon a time it was the done theological thing to argue away the wee small hours by counting the number of angels who could cavort upon a pinhead. A slightly more irreverent discussion is taking place as to the number of magazines the Amstrad owners of the world can support. Even discounting the various Sinclair organs (wisely), and the What Clone style of publication, there appear to be seven on the market at the moment. LSB knows of two definite New Year newcomers, with the consensus among the more cynical onlookers being that just one more "Taking your Amstrad to Bed", or "Squelch!!!" will equal the critical mass for the market. There'll be so many hacks reading each other's mags and slagging each other off that it won't matter if the public never buy a single copy. Which is just as well, considering.

Ave Atque Vale (that'll fox LocoSpell). Alex Martin follows his recent promotion from editorial assistant to assistant editor on this illustrious magazine by leaving. LSB wishes him the very best of British with his new projects (you ain't heard the last of him yet, mark our words), and wonders who'll run the magazine while Simon Rockman gets his car fixed. **ACU**

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